DOCUMENT RESUME

ED 357 272 CE 063 701

AUTHOR	Yap, Kim; Owens, Thomas R.
TITLE	A Statewide Evaluation of Professional Technical Education in Oregon. Final Report.
INSTITUTION	Northwest Regional Educational Lab., Portland, Oreg.
SPONS AGENCY	Oregon State Advisory Council for Career and Vocational Education, Salem.; Oregon State Dept. of Education, Salem. Office of Community Coll. Services.; Oregon State Economic Development Dept., Salem.
PUB DATE	Mar 93
NOTE	217p.
PUB TYPE	Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01/PC09 Plus Postage.
DESCRIPTORS	Articulation (Education); *Educational Practices; *Education Work Relationship; High Schools; Postsecondary Education; *Program Development; *Program Improvement; *State Programs; Statewide Planning; *Technical Education; Vocational Education
IDENTIFIERS	*Oregon

ABSTRACT

An evaluation of Oregon's professional technical education and work force programs was conducted through examination of handbooks for high school and community colleges, secondary education enrollment reports, state employment division documents, Workforce 2000 applications, and interim and final reports on professional technical education and Workforce 2000 programs. The evaluation also included field work involving interviews with key officials, surveys, focus group discussions in each of the state's 18 professional technical education regions, and 4 in-depth case studies of selected regions to identify exemplary practices and the essential elements common to them. The survey data were collected from the following: 159 high school teachers, 40 counselors, 51 administrators, and 487 high school students; 89 community college teachers, 18 counselors, 35 administrators, and 157 community students; and 18 private technical school teachers, 3 counselors, 13 administrators, and 69 private professional technical school students. Two sets of conclusions and recommendations were drawn: those pertaining to the overall professional technical education program and those specific to several critical program areas. Some general conclusions and recommendations were as follows: (1) current programs are underfunded and should be made more of a priority by the state; (2) two-year programs suffer from a poor public image and efforts should be made to improve this negative image; and (3) since professional technical education has gained increased visibility and is serving more populations, such growth should be continued. Specific conclusions were drawn and recommendations were made in the following areas: increasing involvement of stakeholder groups, program coordination, information system development, curriculum and instruction issues, student preparation, special populations, professional development, economic development, development of effective practices, and dissemination of information on effective practices. (The report contains 29 tables and 13 figures. A technical appendix gives detailed survey information.) (KC)

ED357272

The Northwest Regional Educational Laboratory

FINAL REPORT

A STATEWIDE EVALUATION OF PROFESSIONAL TECHNICAL EDUCATION IN OREGON

March 1993

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A Statewide Evaluation of Professional Technical Education in Oregon

FINAL REPORT

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March 1993

Sponsoring agencies for this report include: Economic Development Department; Department of Education, Office of Professional Technical Education; Office of Community College Services; and State Advisory Council on Career and Vocational Education.

ACKNOWLEDGMENTS

This project would not have been possible without the dedication and hard work of a large number of agencies and individuals.

Without the proactive leadership of policymakers at the Oregon Department of Education, the Economic Development Department, the Office of Community College Services, and the State Advisory Council for Career and Vocational Education, the project would not have come into being. In this regard, our gratitude goes to Bob Baugh and Barbara Mitchell of the Economic Development Department, J D Hoye of the Department of Education, Debbie Lincoln of the Office of Community College Services, and Holly Miles of the State Advisory Council for Career and Vocational Education.

Eugene Vinarskai and Ray Rhodes of the Office of Professional Technical Education (OPTE) provided guidance and assistance in the early stages of the study. Upon their retirement, Ralph Yoshimura took over the coordination function with vigor and grace.

The ad hoc advisory panel established for the evaluation project performed the crucial function of keeping the project on track with respect to design and implementation. The advice and guidance of the panelists have enhanced both the scope and quality of the project.

Staff of the Northwest Regional Educational Laboratory, who have the primary responsibility for conducting the evaluation, have benefited greatly from technical assistance provided by Bob Watrus of the Northwest Policy Center, University of Washington, and Gary Hoachlander of the National Center for Research in Vocational Education at Berkeley, California. They played a key role in ensuring the adequacy of the evaluation design, instrument development, data collection, and the development of study reports. Bob Watrus also conducted interviews with key policymakers as part of the data collection effort.

The field research and other onsite activities would not have gone as smoothly as they did without the gracious cooperation and assistance of a large number of local leaders in professional technical education. In particular, our sincere thanks go to the regional coordinators who played a key role in identifying and recruiting appropriate focus group participants as well as making the necessary arrangements for the focus group meetings to take place in their respective regions. Without the able assistance of the professional technical deans and institutional researchers at the community colleges, the surveys of administrators, staff, and students would not have enjoyed as high a response rate as they did. The help we received from these individuals is deeply appreciated.

A note of appreciation is extended to all the secondary school administrators who not only served as survey respondents but also assisted with survey administration at their respective school sites.

Our thanks also go to all school staff and students, both high schools and community colleges, who completed and returned the surveys.

Joan Stoddard, Alan Schultz, and Rich Schmidt of the Department of Education and Tom Hughes of the Office of Community College Services provided guidance and assistance in our search for existing data relevant to the evaluation study. We appreciate their patience and willingness to help.

At the Laboratory, Larry McClure provided the overall direction and oversight for the project. Kim Yap and Tom Owens were responsible for the overall evaluation design as well as planning and implementation of the various evaluation tasks. Dean Arrasmith contributed valuable ideas to the initial design of the study. Kim Yap provided the overall coordination for the project and preparation of the evaluation report.

The following Laboratory staff conducted a wide array of evaluation activities, including interviewing key players, moderating focus group meetings, and/or serving as field researchers for the case studies:

Ann Davis
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Bert Diamond

Each of these staff also contributed to the writing of various sections of the evaluation report.

Changhua Wang assisted with data analysis for the surveys of administrators, school staff, and students. Without his tireless efforts, the survey data would have remained volumes of numbers instead of meaningful findings.

Donnie Benjamin, Kathy Petersen, and Steve Funk-Tracy provided excellent support for survey administration, data entry, and report preparation. Barbara Hernandez contributed her excellent editorial skills to the preparation of the final report.

Given the size and complexity of this project, we are certain that there are individuals not acknowledged here who have played a significant role in the study. We wish to extend a note of thanks to all who were involved in the project.

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BACKGROUND

Both national and local attention has focused in recent years on the challenges of bringing the U.S. workforce up to world class standards, training workers to meet the requirements of a high performance workplace, and improving the transition from education to work. In its report, *America's Choice: high skills or low wages!*, the Commission on the Skills of the American Workforce concluded that the United States is headed toward an economic cliff unless fundamental changes are made in its approach to education and work. The Secretary's Commission on Achieving Necessary Skills (SCANS) was asked to determine whether our young people are capable of meeting the demands of the workplace. It concluded that most young people leave schools without adequate preparation to find and hold a good job. As part of its charge, SCANS has defined the skills needed for employment in the 21st century.

Professional technical education in Oregon is offered in 18 occupational clusters in secondary schools and in some 460 certificate and degree programs in community colleges. Community colleges also offer a variety of targeted and tailored services to businesses and the community. The Oregon Legislature enacted several groundbreaking pieces of legislation in response to challenges in professional technical education. In 1989, Workforce 2000 I created 17 specific workforce programs. In 1991, Workforce 2000 II, with a budget of over $10 million, continued this series of complex and interrelated partnerships for workforce training and education program development.

In addition to this legislation, a Workforce Quality Council comprising 14 representatives from business, labor, education, and human resource development agencies was established in 1991 to coordinate an integrated system of workforce education and training.

The Oregon Educational Act for the 21st Century, House Bill 3565, is in part modeled after the recommendations in the *America's Choice* report, including setting performance standards for all students. This restructuring effort has placed Oregon in the national limelight as others look to us to see what will be the effect of such fundamental changes in the educational system. This major reform effort, however, must take place within a period of financial austerity as Measure 5 requires schools to slash operating budgets. Implementation of HB3565 faces both philosophic and economic challenges.

In this context of challenge and major educational and workforce reform, the legislature earmarked funds for a third party evaluation of professional technical education and workforce programs. The evaluation was sponsored by several state agencies and carried out by staff of the Northwest Regional Educational Laboratory. These state agencies include the Economic Development Department, the Department of Education, the Office of Community College Services, and the State Advisory Council on Career and Vocational Education.

METHODOLOGY

To do a comprehensive assessment of Oregon's professional technical education and workforce programs, project evaluators carried out a variety of data collection tasks. They identified, obtained and extracted relevant data from documents and other related materials that pertained to key program concerns. These documents included:

- Revised evaluation handbooks for professional technical education for high schools and community colleges
- Secondary Education Report of Vocational Enrollment (SERVE) reports
- Employment Division documents
- Workforce 2000 applications
- Biennial interim and final reports on professional technical education and Workforce 2000 I and II programs

The evaluators conducted fieldwork from October through December 1992 to collect both quantitative and qualitative data about professional technical education as a whole and about currently operating program components. Field work comprised four major activities:

- ***Interviews*** with key players to obtain perspectives on program processes and outcomes, including significant accomplishments, concerns, issues, and problems in program operation, coordination, and integration

- ***Written surveys*** with stakeholder groups to build a comprehensive database of stakeholders' perceptions of program processes and outcomes

- ***Focus group discussions*** in each of the state's 18 professional technical education regions to obtain a more in-depth analysis of issues relating to program implementation and outcomes

- ***Four in-depth case studies*** of selected regions to identify exemplary practices and the essential elements common to them

CONCLUSIONS AND RECOMMENDATIONS

Each of the study components has provided a wealth of information on the status of professional technical education in Oregon as reflected in existing data and as perceived by the various stakeholder groups. Based on the nature of the findings, it is appropriate to offer two sets of conclusions and recommendations: those pertaining to the overall professional technical education program and those specific to several critical program areas.

General Conclusions and Recommendations

Commitment and Priorities

With the passage of HB3565 and the implementation of the Workforce 2000 I and II Acts, the state has added new dimensions to its efforts to improve professional technical education and workforce training activities. Most educators and other stakeholder groups welcome these initiatives as a catalyst for a new wave of school reform activities that must be implemented if Oregon is to adequately prepare its students and workers for the 21st century. While these efforts have enhanced both the nature and scope of professional technical education, the bulk of the work in terms of implementation remains to be accomplished. In view of the current budget shortfalls and in the climate of Measure 5, an uneasy feeling exists among many school staff and program administrators that the commitment and priorities set in motion by the state may lose their momentum. Moreover, many policymakers and administrators believe that to continue to implement elements in the reform package, an increasingly greater amount of resources will be needed.

We recommend that the state reaffirm its commitment and priorities by providing resources to maintain and build on the momentum it has achieved in improving professional technical education and workforce training in the state.

Attitudinal Barriers

Strong evidence suggests that negative attitudes toward professional technical education pose a serious barrier to the implementation of the reform package. Many parents, students and school staff define success as a four-year college degree. They perceive professional technical education as less than desirable, a dumping ground for less able students. Indeed, many school staff see their job as preparing students for four-year colleges. The pervasiveness of these attitudes among parents, students and school staff themselves calls for an extensive and sustained educational campaign to increase awareness of the importance and value of professional technical education in creating a world class workforce for the 21st century.

We recommend that the state in collaboration with business, industry, and labor make a concerted effort to carry out such a campaign as an integral part of its strategy for improving professional technical education. To help change the negative image of professional technical education, the state should develop a marketing strategy, including the use of the mass media, to give the general public a more accurate depiction of the critical role of professional technical education in building a secure future for the state and its people. At the same time, the state should increase its efforts to improve program quality through rigorous evaluation of individual professional technical education programs. This is imperative if professional technical education is to shed its negative image and to convince skeptics that its image problem is not a result of poor program quality.

Accomplishments

During the past several years, significant and far-reaching improvements have been made in professional technical education and workforce training programs in the state:

- Professional technical education has gained increased visibility
- Additional resources (e.g., Workforce 2000 I and II funding) have been provided
- Program coordination has improved through such innovations as 2+2/Tech Prep programs
- Involvement of business, industry and other stakeholder groups has become more intense and meaningful
- Special populations are now better served
- Applied academics have been more extensively incorporated
- Signs indicate that attitudes toward professional technical education are slowly changing for the better
- The quality of Job Training Partnership Act (JTPA) programs has continued to improve

In addition, the Workforce 2000 I and II Acts have contributed to the development and refinement of 2+2/Tech Prep programs, the improvement of technology education, and the upgrading of equipment for professional technical education. Moreover, Workforce 2000 II programs have placed increased emphasis on business-education partnerships, staff development, science and mathematics education, assessment of program outcomes, and the implementation of educational reform at the secondary level. This increased emphasis is congruent with workforce development needs identified in the present study and serves to reinforce the state's commitment to having a globally competitive workforce by the year 2010.

While formidable challenges and obstacles remain, professional technical education practitioners and policymakers have reasons to be encouraged by these recent developments.

We commend the local, regional, and state level leaders for their outstanding contributions to professional technical education and recommend that they continue their collaborative efforts in building a world class workforce for the 21st century.

Specific Conclusions and Recommendations

Involvement of Stakeholder Groups

The participation of business, industry, and labor in professional technical education is highly beneficial. However, it has not been as extensive as it could be. In some cases, such involvement has been limited and short-term, lessening its value in improving program practices. Labor's participation, in particular, has been much less than it could be. In many cases, the involvement does not include areas in which maximum benefits

can be achieved (e.g., internships for teachers and work-based learning for students). In addition, the bulk of response has come from larger businesses; small businesses seldom participate. Parental involvement is essentially non-existent.

We recommend that concerted efforts be made to increase the involvement of all stakeholder groups in general and the involvement of business, industry, and labor in particular. Such efforts should ensure that (a) the stakeholder groups are well prepared (e.g., through orientation and debriefing meetings) to engage in meaningful involvement, (b) their involvement is consistent and long term, and (c) turf issues, a major barrier to effective involvement, are addressed. Also, parents should be given an active role in the development and implementation of professional technical education.

We further recommend that such involvement occur in areas where it counts the most. This includes: (a) providing internships for teachers and structured work experiences, including apprenticeships, for students; (b) infusing industry standards in curriculum development; (c) assessing the needs of business, industry, and labor; and (d) obtaining and using labor market information. In addition, special efforts should be made to encourage and facilitate the involvement of small businesses and labor. Such involvement should be facilitated through the use of waivers from restrictive rules and regulations whenever possible.

Other steps the state may take include:

- ***Make business, industry, and labor a part of the decisionmaking process at all levels of professional technical education and the workforce development system.***

- ***Provide incentives for business, industry, and labor to become involved in professional technical education and workforce training programs. For example, tax credits may be provided to induce business to provide students with structured work experience.***

- ***Conduct periodic surveys with business, industry, and labor to determine their education and training needs and the extent to which those needs are met.***

Program Coordination

Great variation exists in the extent of program coordination among different levels of the professional technical education system. The strongest linkage exists between high schools and community colleges, mainly through 2+2/Tech Prep articulation agreements. Coordination with four-year colleges is very limited, if it exists at all. Coordination with middle schools and private vocational schools is virtually non-existent. Programs funded through Workforce 2000 I and II appear well coordinated with Carl Perkins programs, but much less so with JTPA and Job Opportunities and Basic Skills (JOBS) programs. In many cases, coordination is hampered by (a) a lack of time or the absence of a designated

staff person to carry out the coordination function, (b) a lack of understanding of the other agencies, (c) divergent goals of different programs, and (d) turf issues needing to be addressed.

We recommend that, in order to establish a coherent system of professional technical education, greater attention and increased resources (in the form of release time or staff positions) be dedicated to program coordination. Such efforts should be designed to (a) eliminate duplicated services within and across programs, (b) strengthen 2+2/Tech Prep programs as a vital means of coordination between high schools and community colleges, and (c) create a consistent and common vehicle for recordkeeping and information dissemination. In addition, the recently created Workforce Quality Council should assume an increasingly proactive role in bringing together business, industry, labor, and government to develop a more focused and coherent workforce training system. The state should study the feasibility of creating a single agency to administer most, if not all, of the workforce programs, as suggested by the Workforce Quality Council.

Information System

There is a general dearth of outcome data based on uniform performance measures and standards across the existing professional technical education programs. This makes the sharing of meaningful information among different state agencies and the evaluation of individual programs difficult, if not impossible.

We recommend that the state continue to expedite its current effort to establish a shared information system to maintain outcome data as well as to disseminate program information among different state agencies. Such a system should be decision-focused and should incorporate a set of uniform measures and standards consistent with those specified in the Oregon Benchmarks. It should also have the capability of tracking professional technical students over time to provide longitudinal data for planning and evaluation purposes.

Curriculum and Instruction

Most high school and community college students in professional technical education are taking applied academics courses—the most popular are Applied Mathematics and Applied Communication. Applied academics are generally well received by students, who rate very favorably both the course contents and instructional methods. However, because of the fullness of the mandated curriculum, applied academics classes are usually offered as electives. When budget cuts occur, applied academics are among the first to be eliminated from the curriculum. Only a small percentage of students have participated in structured work experience programs. At the high school level, little structured work experience is provided. When available, work experience tends to be loosely organized, mostly unsupervised, and generally contingent upon students being able to find jobs which may or may not be related to their occupational goals. Apprenticeship programs are rare

at both the high school and community college levels. The provision of structured work experience is especially problematic in remote rural areas where resources are limited and businesses are small and few. In addition, the availability and use of industry standards in curriculum development and the use of competency-based approaches in instruction are not widespread.

We recommend that greater attention be paid to curriculum and instruction issues with a view to increasing (a) the provision of structured work experiences, (b) the use of available industry standards in curriculum development, and (c) the use of competency- or outcome-based approaches in delivering instruction. We further recommend that where they do not exist industry standards be developed for use in curriculum development and instruction.

Student Preparation

A large number (up to one half or more) of high school students are not well prepared to take professional technical education courses at community colleges. Lacking basic skills in mathematics, science, writing, and computer skills, these students often require more instructional time to benefit from community college programs. The Tech Prep/Associate Degree model provides a framework for this kind of planning.

We recommend that high school programs be strengthened to better prepare students for further education in professional technical areas. To this end, the high school programs should (a) consider the increased use of competency-based instruction, (b) provide more hands-on experience, (c) upgrade equipment and facilities, and (d) place increased emphasis on proficiency and application of skills in mathematics, English, reading, and writing.

Special Populations

The enrollment of special populations (e.g., females in nontraditional occupations and disadvantaged, limited English proficient, and disabled students) and their use of support services have increased during the past two years. The increase is mainly due to (a) better support services, (b) better coordination with other agencies, and (c) better staff development in this area.

We recommend that efforts to increase the enrollment of special populations be continued and intensified by (a) encouraging special students to enroll in professional technical education, (b) better marketing of available services, and (c) changing negative attitudes toward nontraditional occupational options (e.g., women in manufacturing industries).

Professional Development

Most professional technical educators participate in professional development activities during the school year and provide highly favorable ratings on the effectiveness of these activities. The most prevalent activities are professional association meetings and seminars or workshops. Much less common are peer coaching/guided practice and internships.

We recommend that this trend be continued with increased emphasis on internships with business and industry. We further recommend that professional development activities include all teachers and counselors to raise their awareness of the world of work and to improve their attitudes toward professional technical education in general.

These professional development activities should place particular emphasis on (a) integrating professional technical education with the entire school curriculum, not just applied academics classes, and (b) providing structured work experiences for students.

Economic Development Priorities

A significant number of educators, including some professional technical program administrators, are not familiar with the economic development priorities in their respective regions. Many are not familiar with the priorities for the state as a whole. A quarter or less of the administrators indicate that they are aware of plans to continue programs started under Workforce I and II in their respective regions. If professional technical education and workforce development efforts are to be highly congruent with and supportive of specific economic development objectives, much more needs to be done to publicize such objectives.

We recommend that greater efforts be made to raise public awareness of the economic development plans of the respective regions as well as the overall priorities which the state as a whole is pursuing. We further recommend that steps be taken to increase the use of labor market information in designing professional technical education programs.

Development of Effective Practices

The case studies reveal that the essential ingredients of exemplary practices are (a) strong local leadership, (b) extensive private sector involvement, (c) emphasis on the use of technology, (d) incorporation of competency-based curriculum and instruction, (e) effective program coordination, (f) commitment to building staff capabilities, (g) long-term strategic planning, and (h) adequate resource support.

We recommend that local, regional and state level policymakers promote and nurture these ingredients in future program development and implementation so that effective practices are developed and replicated on an ongoing basis.

Dissemination of Effective Practices

In most instances, professional technical educators find out about effective practices through discussions with colleagues, at professional conferences, in reading, or by site visits. They share information on such practices in much the same ways.

Inasmuch as sharing effective practices is vital to the overall effort to improve professional technical education, we recommend that more extensive and systematic approaches be developed to disseminate such information. Examples include developing a dedicated newsletter and/or an electronic bulletin board on effective programs and using video technology (e.g., short videotapes on effective practices) to disseminate relevant information to a wider audience in a timely manner.

I. INTRODUCTION

OVERVIEW OF CURRENT PROFESSIONAL TECHNICAL AND WORKFORCE 2000 PROGRAMS

A call has gone out across the nation and Oregon for educational reforms that will enable young people to meet the demands of the workplace and the U.S. economy to be competitive in the global marketplace. Oregonians are expanding the scope and upgrading the quality of professional technical education and workforce programs in the midst of economic challenges from abroad, a state legislative mandate for change, and severe local budget limitations. The process has just started. This study takes a look at what is now in place and what educators and business and community people think is needed to reach Oregon's goal of having the best trained workforce in the country by the year 2000.

Secondary schools in Oregon provide professional technical education in 18 occupational clusters. Community colleges provide short-term, certificate, and associate degree programs in some 460 programs and offer a variety of targeted and tailored services to business and the community. These professional technical programs are administered by the Office of Professional Technical Education (OPTE) of the Oregon Department of Education.

In 1989, the Oregon legislature created 17 specific programs for workforce development under the Workforce 2000 I Act. These programs complemented, improved, and supplemented existing professional technical and other job training programs. Nine of the programs were administered by OPTE in cooperation with the Office of Community College Services (OCCS). Under Workforce 2000 Act II, the 1991 legislature renewed funding for most of the programs created in 1989.

At present, approximately 1,100 professional technical education programs are offered in 217 high schools. Sixteen community colleges provide some 460 programs. Workforce 2000 programs comprise the following:

- An Advanced Technology Center operated by a consortium of five community colleges.
- Four Community-Based Skill Centers started in 1989 at four community colleges. An additional Community-Based Skill Center was started in 1991.
- Approximately 140 2+2/Tech Prep programs, high school professional technical programs, equipment upgrade, and teacher/counselor internships in business offered in 18 workforce regions.
- At least 30 technology education and 30 applied academic programs at the secondary level. Technology education is primarily offered at the middle school level and replaces traditional industrial arts programs. Secondary applied academics courses have been implemented in language arts, mathematics, science and physics.

- Tech Prep/Associate Degree (TPAD) programs, primarily in grades 11 through 14, in all 18 workforce regions. Applied academic courses implemented in conjunction with TPAD programs include language arts, mathematics, science, and economics.

The effort to improve professional technical education is linked to the educational reform movements—the enactment in 1991 of House Bill (HB) 3565, the Oregon Educational Act for the 21st Century and the Oregon Benchmarks, an unprecedented effort on the part of the state to measure progress toward the state's economic development goals. According to a 1991 report on the Benchmarks, Oregon is to maintain its natural environment, build communities on a human scale, and develop an economy that provides well-paying jobs to its residents. Two relevant and critical benchmarks are: (a) an increase in the percentage of high school students enrolled in professional technical education programs from 9 percent in 1990 to 55 percent in 2010, and (b) an increase in the percentage of high school students enrolled in structured work experience programs from 3 percent in 1990 to 55 percent in 2010.

The future of Oregon and its residents will depend increasingly on an able, skilled, and productive workforce. As the Benchmarks report indicates, Oregon workers and employers must be able to respond effectively as low skilled jobs shift to developing countries and as global markets and technologies make new demands on work place skills and organization. *"Workers who cannot adapt to changing work place requirements will be vulnerable to economic dislocation. Employers who do not recognize and respond to changing technologies and competition will be at risk of failure."* Oregon will be hard pressed to keep its livability in the face of growth and economic dislocation while striving to keep its people well educated and globally competitive.

IMPETUS FOR EVALUATION

Workforce 2000 I was established on the basis of results from federally funded assessment and pilot studies of 2+2/Tech Prep and other professional technical program improvement efforts. The 1989 legislature raised concern regarding the evaluation base for program reform. Broad-based education reform movements have amplified the need for a comprehensive database for program evaluation. The 1991 legislature, in addressing evaluation concerns, specified some explicit evaluation areas. Findings are to be presented to the Trade and Economic Development Committee during the 1993 session.

The educational reform movements and the attention given recently in Oregon to the report of the Commission on the Skills of the American Workforce entitled *America's Choice: high skills or low wages!* and the report of the Secretary's Commission on Achieving Necessary Skills (SCANS) provide an exciting opportunity for Oregon to take a reflective look at its professional technical and workforce programs as they currently exist and as they may be reshaped for the 21st century.

In May 1992, the Northwest Regional Educational Laboratory (NWREL), in partnership with the National Center for Research in Vocational Education at Berkeley, California, and the Northwest Policy Center at the University of Washington, was selected to conduct a statewide study of professional technical education and workforce training programs in Oregon.

SCOPE OF THE STUDY

The evaluation study covered both secondary and community college programs, including the Workforce 2000 I and II Acts and ongoing professional technical programs. Particular attention was paid to connections among these programs and linkages with such public and private training providers as the Job Training Partnership Act (JTPA) and Job Opportunities and Basic Skills (JOBS) programs. The evaluation focused on the following program areas:

1. Effectiveness of program coordination
2. Involvement of business, industry and labor
3. Shifts in program emphasis between Workforce I and II
4. Use of articulation models
5. Incorporation of applied academics
6. Effectiveness of regional consortia
7. Effectiveness of staff development
8. Dissemination of exemplary practices
9. Access for special populations
10. Curriculum development and delivery
11. Structured work experience
12. Compatibility with economic development strategies
13. Program continuation
14. Incorporation of the *America's Choice* and SCANS concepts
15. Improvement for long-range reform

The study did not cover all possible components of the workforce training system in Oregon. For example, apprenticeship, an essential component of the workforce training system, was examined only to the extent that it relates to high school and community college programs.

DATA COLLECTION

Data collection consisted of two parts: Part I focused on identifying and obtaining existing data pertinent to the evaluation, and Part II involved carrying out fieldwork tasks. Existing data were gathered for student demographic information on the secondary and postsecondary levels from a variety of sources. Fieldwork included the gathering of both quantitative and qualitative data.

Existing Data

The following documents and other related materials were obtained from appropriate agencies and relevant data extracted. Examples of relevant documents and data sources include the following:

- Revised evaluation handbooks for professional technical education for high schools and community colleges
- Secondary Education Reporting of Vocational Enrollment (SERVE) reports
- Employment Division (OIC) documents
- Workforce 2000 applications
- Biennial interim reports on professional technical education and the Workforce 2000 I and II Acts

Fieldwork

Fieldwork, carried out from October through December 1992, included (a) interviews with key players, (b) surveys of stakeholder groups, (c) focus group discussions in each of the 18 regions, and (d) the conduct of four in-depth case studies.

Interviews with Key Players

Interviews with key players obtained their perspectives on program processes and outcomes, including significant accomplishments, concerns, issues and problems in program operation, coordination, and integration. Eighteen policymakers in the executive and legislative branches of state government and administrators of relevant state agencies participated in the interviews.

Written Surveys

Written surveys helped build a comprehensive database of stakeholder groups' perceptions on program processes and outcomes. The surveys were conducted with 16 community colleges and stratified random samples of 47 public high schools and 30 private vocational schools. The respondent groups consisted of school or program administrators, program staff, and students. The survey samples included:

- 51 High school administrators
- 35 Community college administrators
- 199 High school teachers and counselors
- 107 Community college teachers and counselors
- 13 Private professional technical school administrators
- 21 Private professional technical school teachers and counselors
- 487 High school students

- 157 Community college students
- 69 Private professional technical school students

Focus Groups

The use of focus groups allowed evaluators to obtain more in-depth information on issues related to program implementation and outcomes. These group discussions covered topics related to the development and implementation of professional technical education and workforce programs and what specifically facilitates and hinders implementation. Two focus group meetings were conducted in each of the 18 regions: one with service providers (teachers, counselors and program administrators) and one with service recipients (students, parents, community members, and representatives from business, industry, and labor). A total of 156 service providers and 136 service recipients participated in the focus group discussions.

Case Studies

Case studies provided an in-depth view of an exemplary practice(s) in each of the selected regions and helped identify essential elements common to the exemplary practices. Selected regions were:

- Coos/Curry counties
- Douglas county
- Umatilla/Morrow counties
- Portland Metropolitan Area

The study has focused on professional technical education provided at secondary schools and community colleges. It did not cover all possible components of the workforce training system in Oregon. For example, while the evaluation was concerned with the relationship between professional technical education programs at high schools and community colleges and services offered by JTPA and JOBS, the study did not seek to provide an individual assessment of these and other related programs. Similarly, the apprenticeship program, an essential component of the workforce training system, was examined only to the extent that it relates to high school and community college programs.

The following sections present major findings for each of the study components and overall conclusions and recommendations.

II. EXISTING DATA

Student Enrollment

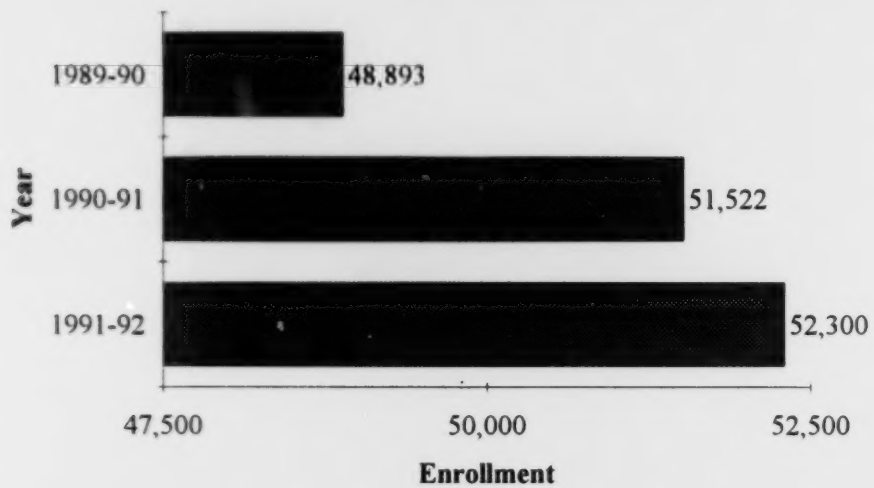
Workforce 2000 I and II

STUDENT ENROLLMENT

Secondary

Data on secondary, more specifically on professional technical education, enrollment statistics were collected and analyzed. In most cases data were requested through OPTE for the school years 1989-90, 1990-91, and 1991-92 so that the evaluators could start to look at emerging trends. These data should be useful both as a profile of current status and as a good baseline for future comparisons. It is apparent that enrollments in high school programs are in an upward trend (see Figure 1).

Figure 1
Total Enrollment in Professional Technical Education in Secondary Schools



The overall percent of racial/ethnic minority secondary students in Oregon is between 10 and 11 percent. Table 1 contains the Oregon public school enrollment in grades 9-12 by racial/ethnic distribution. The overall enrollment of racial/ethnic secondary students is increasing each year, with the percent of Hispanic students growing at the fastest rate.

The overall rate of minority student enrollment in professional technical education has increased from 12 to 14.7 percent from 1989 to 1992 as shown in Table 2 and Figure 2. This compares favorably with the overall rate of minority student enrollment for the schools as a whole.

Table 1
Secondary Enrollment by Racial/Ethnic Distribution
1989-90, 1990-91, and 1991-92

Racial/Ethnic Group	1989-90 Enrollment	1989-90 Percent	1990-91 Enrollment	1990-91 Percent	1991-92 Enrollment	1991-92 Percent
American Indian	2,233	1.7	2,158	1.7	2,503	1.7
Asian/Pacific Islander	4,287	3.1	4,453	3.4	4,563	3.2
African-American	2,919	2.1	2,859	2.2	3,054	2.1
Caucasian	118,683	90.0	119,750	89.0	123,748	89.0
Hispanic	4,197	3.1	4,997	3.7	5,708	4.0
Total	132,319	100.0	134,217	100.0	139,576	100.0

Percent = percent of total secondary enrollment.
Source: Oregon Department of Education, Fall Reports.

On the following pages, Tables 2, 4 through 7, and 10 provide data using the 21 program areas in professional technical education. Below is a crosswalk between these program areas and the six strands of the Certificates of Initial and Advanced Mastery, proposed as part of HB3565.

Arts and Communication
Graphics Design/Production

Business and Management
Accounting and Financial Systems
Marketing
Clerical
Secretarial
Office Systems
Food Service
Hospitality, Tourism, Recreation

Health Services
Health Occupations

Human Resources
Childhood Care and Education (Clothing)
Service Occupations

Industrial and Engineering Technology
Construction Technology
Drafting
Electronics Technology
Integrated Technology (new)
Manufacturing Technology
Mechanical Technology

Natural Resource Systems
Agricultural Science and Technology
Forestry/Natural Resources

Other Professional Technical Instruction
Diversified Occupations

Table 2
Secondary Professional Technical Education Enrollment of Minority Students by Program Area, 1989-90, 1990-91, and 1991-92

Program Area	1989-90 Enrollment			1990-91 Enrollment			1991-92 Enrollment		
	Minority	Total	Percent	Minority	Total	Percent	Minority	Total	Percent
Acctg/Fin Sys	702	6,614	10.6	801	6,981	11.5	1,374	7,475	18.4
Agriculture	472	5,596	8.4	500	5,684	8.8	544	6,193	8.8
Child Care	294	2,380	12.4	383	2,579	14.9	432	2,997	14.4
Clerical	615	4,481	13.7	438	3,473	12.6	101	691	14.6
Clothing	26	30	8.7	32	34	94.1	4	24	16.7
Construction	74	866	8.6	93	1,142	8.1	132	1,258	10.5
Diversified Occups	119	1,075	11.1	124	939	13.2	158	843	18.7
Drafting	157	1,218	12.9	236	1,698	13.9	259	1,662	15.6
Elec Tech	123	887	13.9	115	931	12.4	200	918	21.8
Food Service	135	896	15.0	136	1,034	13.2	155	1,181	13.1
Forestry/ For Prods	86	575	15.0	90	594	15.1	60	592	10.1
Graphics D&P	129	1,029	12.5	133	1,115	11.9	151	1,105	13.7
Health Occups	138	608	22.7	170	750	22.7	236	903	26.1
Hosp, Tourism and Recreation	3	134	2.2	17	208	8.2	41	279	14.7
Marketing	449	3,510	12.8	424	3,373	12.6	449	3,183	14.1
Mech Tech	553	4,596	12.0	510	4,991	10.2	639	4,457	14.3
Mfg Tech	283	2837	10.0	24	2,647	9.2	239	2,910	8.2
Office Systems	776	6,178	12.6	1,275	8,205	15.5	1,865	11,557	16.1
Secretarial	241	2,309	10.4	168	1,729	9.7	38	385	9.9
Service Occups	9	263	3.4	7	250	2.8	10	382	2.6
Other Voc Inst	432	2,808	15.4	545	3,164	17.2	580	3,305	17.6
Total	5,797	48,893	12.0	6,221	51,522	12.1	7,681	52,300	14.7

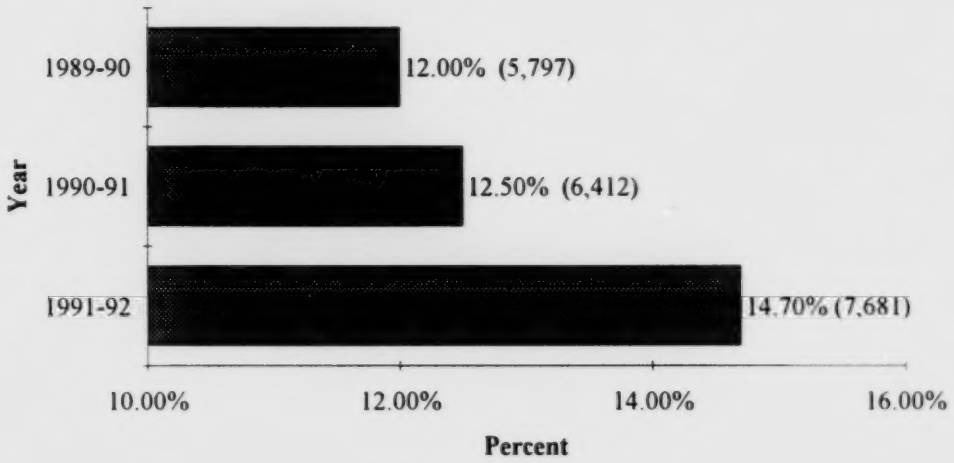
Total = number of secondary professional technical students in each program area.
Percent = the percent of minority students in each program area.
Source: Oregon Department of Education, SERVE Reports.

Legend for Tables 2, 4-7, and 10:

Occups= Occupations	Mfg=Manufacturing
Acctg/Fin Sys=Accounting/Financial Systems	D&P=Design and Production
Tech=Technology	For Prods=Forest Products
Mech=Mechanical	Hosp=Hospitality
Elec=Electrical	Voc Inst=Vocational Instruction

Table 2 also indicates the variation in minority enrollment across the professional technical areas with health occupations having the highest rate, 26 percent, and manufacturing technology the lowest, 8.2 percent, excluding the service occupations category that enrolled only 382 students statewide in 1991-92.

Figure 2
Minority Enrollment in Professional Technical Education in Secondary Schools



Because federally funded professional technical education is intended to benefit special needs students as well as other students, it is important to see the percent of such students being served by professional technical education. Special needs students include the disabled, limited English proficient (LEP), academically disadvantaged, economically disadvantaged, and females enrolled in nontraditional programs.

The number of secondary special education students has decreased slightly over the past three years at the same time that the number of total secondary students is increasing. Table 3 shows the special education enrollment over the past three years and its percent of the total secondary student body.

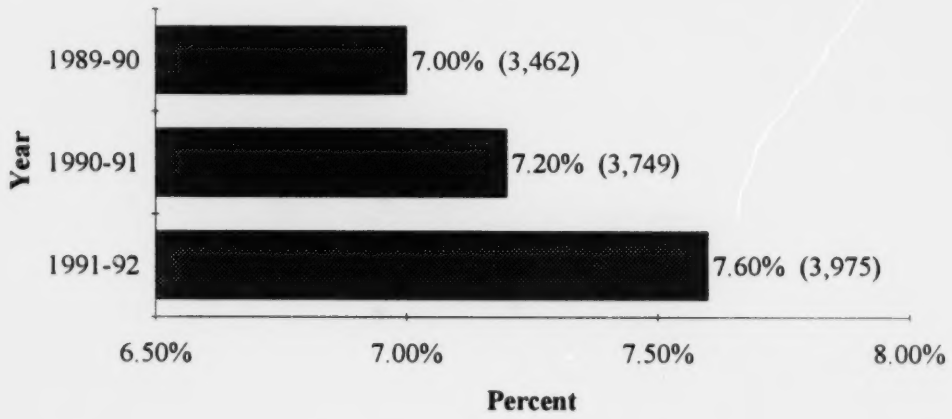
Figure 3 shows the enrollment trends of disabled students in the past three years. Table 4 displays the number and percent of disabled students in each program area for the past three years. In comparing the percent totals of Table 3 and Table 4, one can see that the percent of disabled students in professional technical education is equal to or greater than that for the special education population as a whole. This shows that professional technical education is addressing the disabled population. Table 4 also indicates a wide diversity in the percent of disabled students across the various professional technical education programs and a slight increase in the percent of disabled students in professional education over the past three years.

Table 3
Number of Secondary Special Education Students

School Year	Total Secondary Special Education Students	Total Secondary Students	Percent of Total Secondary Students
1989-90	9,214	132,319	7.0%
1990-91	9,099	134,219	6.8
1991-92	8,931	139,576	6.4

Secondary students are defined here as ages 15-21.
Sources: Disadvantaged Child Census Reports and Oregon Department of Education, Enrollment Reports.

Figure 3
Disabled Student Enrollment in Professional Technical Education in Secondary Schools



In professional technical education areas with at least 300 students, marketing has the least number of disabled students (2.3 percent), while diversified occupations has the largest percent (35.8 percent).

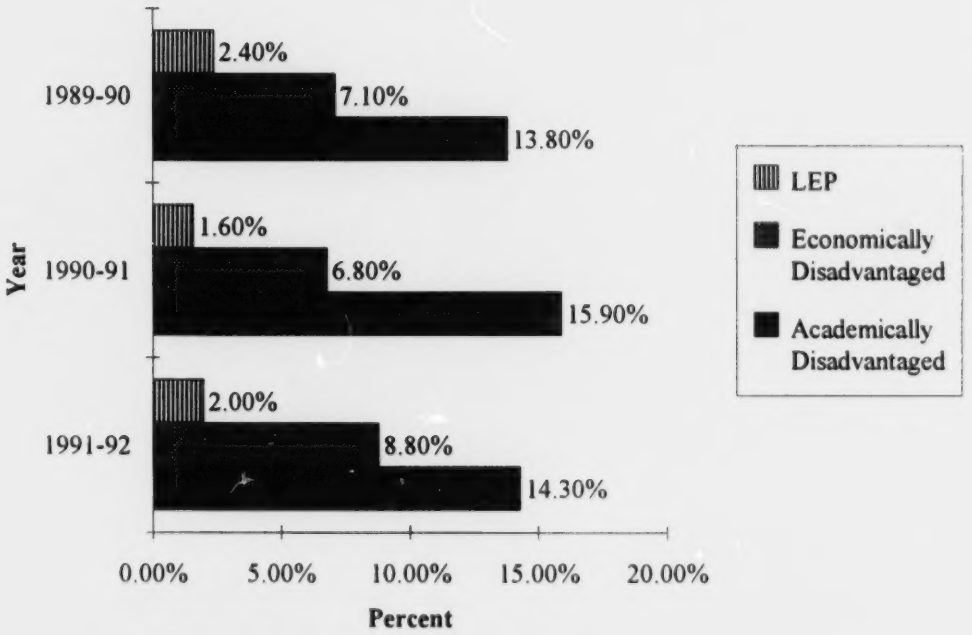
Table 4
Secondary Professional Technical Education Enrollment of Disabled Students by Program Area, 1989-90, 1990-91, and 1991-92

Program Area	1989-90 Enrollment			1990-91 Enrollment			1991-92 Enrollment		
	Disable	Total	%	Disable	Total	%	Disable	Total	%
Acctg/Fin Sys	168	6,614	2.5	193	6,981	2.8	148	7,475	1.9
Agriculture	672	5,596	12.0	693	5,684	12.2	734	6,193	11.8
Child Care	168	2,380	7.0	180	2,579	6.9	261	2,997	8.7
Clerical	187	4481	4.2	194	3,473	5.5	26	691	3.7
Clothing	1	30	3.3	0	34	0	4	24	16.6
Construction	101	866	11.6	111	1,142	9.7	152	1,258	12
Diversified Occups	222	1,075	20.6	227	939	24.1	302	843	35.8
Drafting	51	1,218	4.2	72	1,698	4.2	64	1,662	3.8
Elec Tech	61	887	6.8	70	931	7.5	58	918	6.3
Food Service	83	896	9.3	93	1,034	8.9	87	1,181	7.3
Forestry/ For Prods	88	575	15.3	88	594	14.8	63	592	10.6
Graphics D&P	42	1,029	4.1	68	1,115	6.0	53	1,105	4.8
Health Occups	14	608	2.3	20	750	2.6	6	903	0.6
Hosp, Tourism and Recreation	12	134	8.9	9	208	4.3	20	279	7.1
Marketing	68	3,510	1.9	90	3,373	2.6	73	3,183	2.3
Mech Tech	448	4,596	9.7	598	4,991	11.9	407	4,457	9.1
Mfg Tech	299	2,837	10.5	305	2,647	11.5	331	2,910	11.4
Office Systems	213	6,178	3.4	337	8,205	4.1	483	11,557	4.2
Secretarial	69	2,309	2.9	54	1,729	3.1	29	385	7.5
Service Occups	16	263	6.0	2	250	1.0	16	382	4.2
Other Voc Inst	482	2,808	17.2	438	3,164	13.8	481	3,305	14.5
Total	3,462	48,893	7.0	3,749	51,522	7.2	3,975	52,300	7.6

Total = number of secondary professional technical education students in each program area.
% = percent of disabled students in each program area.
Source: Oregon Department of Education.

Displaying data from the Oregon Department of Education, SERVE Reports, Figure 4 gives the special population enrollment in secondary professional technical education in three categories— LEP, academically disadvantaged, and economically disadvantaged. Table 5 provides these data for each program area. In 1991-92, there were 7,462 academically disadvantaged students, 4,628 economically disadvantaged students, and 1,047 LEP students. Table 6 shows the number of secondary professional technical students in the three categories by program area.

Figure 4
Special Population Enrollment in Professional Technical Education in Secondary Schools



Data related to the gender of students enrolled in professional technical education show gender enrollment has changed little over the past three years Although the Department staff do not have statistics available on the gender breakout of the total secondary population, they estimate it to be 50 percent female. Table 7 shows gender distribution by professional technical program area. The U.S. Department of Education usually considers nontraditional areas as those with less than 25 percent or more than 75 percent of one gender. Using this criterion, Table 8 shows three areas where females predominate and Table 9, six areas where males predominate. Table 10 shows the gender distribution for students enrolled in 2+2/Tech Prep programs. The distribution is similar to enrollment in regular professional technical programs.

Table 5
Secondary Professional Technical Education Enrollment of Limited English Proficient (LEP), Academically Disadvantaged (AD), and Economically Disadvantaged (ED) Students by Program Area as Percent of Total Professional Technical Education Enrollment, 1989-90, 1990-91, and 1991-92

	Percent of Enrollment								
	1989-90			1990-91			1991-92		
Program Area	LEP	AD	ED	LEP	AD	ED	LEP	AD	ED
Acctg/Fin Sys	3.0	8.1	5.1	1.2	10.7	5.9	2.3	10.0	7.9
Agriculture	0.5	11.6	8.4	1.3	11.9	9.2	1.5	11.5	10.2
Child Care	1.3	20.6	5.7	0.9	24.4	7.0	1.8	19.7	9.1
Clerical	3.2	8.1	7.0	0.8	8.3	6.6	2.6	8.0	13.3
Clothing	0	30.0	3.3	0	38.2	5.9	0	12.5	12.5
Construction	1.3	17.0	9.5	1.2	20.1	9.4	0.6	11.4	13.8
Diversified Occups	0.2	23.3	13.5	0.8	20.7	11.0	0.8	12.7	13.2
Drafting	6.7	10.8	5.5	1.1	14.5	2.2	1.6	10.6	4.3
Elec Tech	4.5	7.8	6.9	1.5	16.8	3.9	2.7	17.0	6.5
Food Service	1.6	23.1	6.8	2.2	23.1	8.2	3.0	10.1	12.7
Forestry/ For Prods	1.2	12.3	7.8	0.6	8.3	9.0	0.8	5.9	8.4
Graphics D&P	2.6	16.0	7.0	0.8	21.0	4.0	0.7	19.3	9.5
Health Occups	12.8	1.3	7.0	0.5	13.6	1.6	0.5	8.9	12.9
Hosp, Tourism and Recreation	0	14.2	7.5	0.5	16.8	13.9	3.2	21.5	12.5
Marketing	2.8	11.2	2.8	0.6	13.2	3.9	1.3	9.4	3.2
Mech. Tech	1.8	18.4	8.4	13.8	20.5	5.5	0.8	16.9	10.1
Mfg Tech	1.3	22.9	6.6	0.6	29.0	4.9	0.3	20.4	8.3
Office Systems	2.9	13.5	7.6	4.3	14.8	8.1	3.8	13.2	8.2
Secretarial	1.4	6.2	7.3	0.3	6.2	9.9	0.7	3.1	19.5
Service Occups	0.8	3.0	3.4	0.8	6.0	6.0	0.5	6.5	13.0
Other Voc Inst	2.8	28.9	9.7	2.2	29.9	7.3	1.6	28.7	10.4
Total	2.4	13.8	7.1	1.6	15.9	6.8	2.0	14.3	8.8

Source: Oregon Department of Education, SERVE Reports.

Table 6
Secondary Professional Technical Education Enrollment of LEP, AD, and ED Students by Program Area, 1989-90, 1990-91, and 1991-92

Program Area	1989-90 Enrollment			1990-91 Enrollment			1991-92 Enrollment		
	LEP	AD	ED	LEP	AD	ED	LEP	AD	ED
Acctg/Fin Sys	197	536	337	87	716	410	169	747	587
Agriculture	29	645	468	70	676	520	91	714	632
Child Care	31	490	135	24	628	181	53	591	274
Clerical	142	363	313	31	287	228	18	55	92
Clothing	0	9	1		13	2		3	3
Construction	11	147	82	14	230	107	8	144	173
Diversified Occups	2	261	145	7	194	103	7	107	111
Drafting	80	131	67	18	247	38	27	177	71
Elec Tech	40	69	61	14	156	36	25	156	60
Food Service	14	207	61	23	239	85	35	119	150
Forestry/ For Prods	7	71	45	4	49	54	5	35	50
Graphics D&P	27	165	72	10	235	45	8	213	105
Health Occups	78	8	43	4	102	12	5	80	117
Hosp, Tourism and Recreation	0	19	10	1	35	29	9	60	35
Marketing	97	392	98	19	444	130	41	300	101
Mech Tech	85	845	386	69	1,022	275	40	752	450
Mfg Tech	37	649	188	15	716	129	10	593	242
Office Systems	177	832	473	356	1,218	666	438	1,522	959
Secretarial	32	142	169	6	107	171	3	12	75
Service Occups	2	8	9	2	15	15	2	25	50
Other Voc Inst	75	813	272	70	948	231	53	950	345
Total	1,160	6,726	3,459	843	8,201	3,495	1,047	7,462	4,628

Source: Oregon Department of Education, SERVE Reports.

Table 7
Secondary Professional Technical Education Enrollment by Gender and Program Area, 1989-90, 1990-91, and 1991-92

Program Area	1989-90 Enrollment			1990-91 Enrollment			1991-92 Enrollment		
	M	F	%F	M	F	%F	M	F	%F
Acctg/Fin Sys	2,408	4,206	63.5	2,566	4,415	63.2	2,774	4,701	62.8
Agriculture	3,935	1,661	29.7	3,939	1745	30.7	4,253	1,940	31.3
Child Care	436	1,944	81.7	452	2127	82.5	597	2,400	80.0
Clerical	1,496	2,985	66.6	1,243	2,230	64.2	298	393	56.8
Clothing	0	30	100	1	33	97.1	1	23	95.8
Construction	800	66	7.6	1,054	88	7.7	1,173	85	6.7
Diversified Occups	551	524	48.7	504	435	46.3	440	403	47.8
Drafting	1,029	189	15.5	1,462	236	13.8	1,444	218	13.1
Elec Tech	831	59	6.7	879	52	5.6	865	53	5.8
Food Service	346	550	61.4	365	669	64.7	421	760	64.3
Forestry/ For Prods	475	100	17.4	506	88	14.8	507	85	14.3
Graphics D&P	620	409	39.7	648	467	41.8	635	470	42.5
Health Occups	120	488	80.3	168	582	77.6	209	694	76.8
Hosp, Tourism and Recreation	47	87	64.9	58	150	72.1	75	204	73.1
Marketing	1,546	1,964	55.9	1,596	1,777	52.7	1,503	1,680	52.7
Mech Tech	4,261	335	7.3	4,625	366	7.3	4,094	363	8.1
Mfg Tech	2,717	120	4.2	2524	123	4.6	2,734	176	6.0
Office Systems	1,878	4,300	69.6	2,678	5,527	67.4	4,065	7,492	64.8
Secretarial	687	1,622	70.2	559	1,170	67.7	140	245	63.6
Service Occups	105	158	60.0	77	173	69.2	130	252	66.0
Other Voc Inst	1,799	1,009	35.9	2,000	1,164	36.7	2,039	1,266	38.3
Total	26,087	22,806	46.6	27,904	23,618	45.8	28,397	23,903	45.7

M = number of male students in program area.
F = number of female students in program area.
% = percent of female students in program area.
Source: Oregon Department of Education.

Table 8
Female-Concentrated Program Areas
1989-90, 1990-91, and 1991-92

Program Area	1989-90 Percent of Females	1990-91 Percent of Females	1991-92 Percent of Females
Clothing	100	97	96
Child Care	82	83	80
Health Occups	80	78	77

Table 9
Male-Concentrated Program Areas
1989-90, 1990-91, and 1991-92

Program Area	1989-1990 Percent of Males	1990-1991 Percent of Males	1991-1992 Percent of Males
Mfg Tech	96	95	94
Elec Tech	93	94	94
Construction	92	92	93
Mech Tech	93	93	92
Drafting	84	86	87
Forestry/ Forest Products	82	85	86

Source for Table 8 and 9: Oregon Department of Education.

Table 10
Secondary Professional Technical Education Enrollment in 2+2/Tech Prep Programs by Gender and Program Area for 1990-91

Program Area	1990-91 Enrollment Male	Female	Percent Female
Acctg/Fin Sys	1,873	3,176	62.9%
Agriculture	2,344	1,022	30.3
Child Care	330	1,262	79.2
Clerical	1,045	1,794	63.1
Clothing	0	0	0
Construction	708	51	6.7
Diversified Occups	37	27	42.1
Drafting	1,165	166	12.4
Elec Tech	797	36	4.3
Food Service	48	129	72.8
Forestry/For Prods	400	70	14.8
Graphics D&P	129	59	31.3
Health Occups	35	121	77.5
Hosp, Tourism, and Recreation	25	96	79.3
Marketing	191	291	60.3
Mech Tech	3,083	214	6.4
Mfg Tech	1,967	77	3.7
Office Systems	1,643	3,736	69.4
Secretarial	472	997	67.8
Service Occups	0	0	0
Other Voc Inst	928	561	37.6
Total	17,220	13,885	44.6

Source: Oregon Department of Education, SERVE Reports; data available only for 1990-91.

Postsecondary

Data regarding postsecondary students were obtained from Office of Community College Services (OCCS). As was true for the secondary enrollment, the number and percentage of Hispanic students is rising each year. Table 11 contains the total postsecondary enrollment for the past three years by racial/ethnic distribution. The figures change somewhat for 1991-92 because the category of "unknown" was added for that year.

The professional technical educational enrollment reported by individual community colleges is shown in Table 12 as well as its percentage of the total enrollment for each of the past three years. The figures are high and reflect a headcount of all students who have taken one or more professional technical classes.

Table 11
Community College Enrollment by Racial/Ethnic Distribution
1989-90, 1990-91, and 1991-92

Racial/Ethnic Group	1989-90		1990-91		1991-92	
	Enrollment	Percent	Enrollment	Percent	Enrollment	Percent
American Indian	2,753	0.9	2,635	1.0	3,578	1.1
Asian/Pacific Islander	8,738	2.8	9,398	2.9	10,354	3.2
Afro-American	3,247	1.1	3,563	1.1	4,238	1.3
Caucasian	293,658	92.4	296,922	91.0	266,995	82.4
Hispanic	9,781	2.8	12,979	4.0	13,691	4.2
Unknown	------	---	-------	---	25,109	7.8
Total	318,177	100.0	325,497	100.0	323,966	100.0

Percent = percent of total community college enrollment.

Source: OCCS "Headcount Report Forms" and "SLIAG Report Forms."

The number of PTE students in Table 12 is substantially lower because it is based on the state's more restricted definition of professional technical education student as one who (1) has declared a major in a state-approved professional technical education program, (2) intends to earn a degree or certificate, and (3) has three credits of an approved course within the approved professional technical education program. (*Standards and Measures Definitions for Professional Technical Education Program in Oregon Community Colleges.*)

Table 12
Community College Enrollment in Professional Technical Education (PTE) by School, 1989-90, 1990-91, and 1991-92

School	1989-90 Enrollment			1990-91 Enrollment			1991-92 Enrollment		
	PTE	Total	%	PTE	Total	%	PTE	Total	%
Blue Mountain	2,158	10,294	21	2,344	11,617	20	3,390	10,196	33
Central	2,696	11,986	22	3,357	13,318	25	3,833	14,450	27
Chemeketa	12,316	38,997	32	12,522	39,925	31	14,229	39,717	36
Clackamas	8,653	28,016	31	8,767	28,008	31	9,311	27,275	34
Clatsop	1,191	6,355	19	2,131	6,830	31	1,760	5,573	32
Columbia Gorge	1,615	4,450	36	2,293	4,693	49	1,958	4,323	45
Lane	8,659	32,593	27	7,723	33,213	23	7,796	33,778	23
Linn-Benton	9,425	27,275	35	8,276	27,651	30	7,886	25,547	31
Mt. Hood	6,825	27,113	26	6,669	27,146	25	7,016	29,632	24
Oregon Coast	1,949	5,638	35	1,322	2,497	53	1,453	3,112	47
Portland	29,723	80,385	37	33,398	83,445	40	32,258	83,819	39
Rogue	3,711	12,316	30	2,928	13,437	22	3,029	11,239	27
Southwestern	4,337	9,924	44	3,050	9,533	32	5,541	10,168	55
Tillamook Bay	578	2,658	22	710	2,618	27	986	3,057	32
Treasure Valley	1,226	6,502	19	1,033	6,341	16	1,153	6,961	17
Umpqua	3,076	13,675	23	1,637	15,225	11	2,142	15,119	14
Total	98,138	318,177	31	98,160	325,497	30	103,741	323,966	32

Source: OCCS "Headcount Report Forms."

Table 13 and Figure 5 report the number of professional technical education programs by special needs category for 1991-92. These figures are based on the more restricted definition of professional technical education students. The first column shows the enrollment of special needs students in terms of number and percent in the categories of minorities, females, disabled, academically disadvantaged, economically disadvantaged and limited English proficient. The second and third columns show the number and percent making satisfactory progress (maintaining a cumulative GPA of 2.0 or higher) and those participating in cooperative work experience. In these two columns the percent shown is based on the percent of those enrolled (as shown in column 1). These data are available only for 1991-92. The percent of students participating in cooperative work experiences ranges from 8 to 17 percent with the highest percentage among disabled students and the lowest among LEP students.

Summary

The student demographic data provide some interesting findings at the secondary and postsecondary levels. These are summarized on the following pages.

Table 13

Number of Community College Professional Technical Education Program Students by Special Category That Are Enrolled, Making Satisfactory Progress, and Participating in Cooperative Work Experience (CWE) for 1991-92

Special Needs Category	In Program		Satisfactory Progress		CWE Participation	
	Enrollment	%	Enrollment	%	Enrollment	%
Minorities	2,696	12	2,076	77	238	9
Female	13,264	58	11,632	88	1,427	11
Disabled	1,218	5	1,035	85	206	17
Academically Disadvantaged	10,500	46	8,263	79	1,110	11
Economically Disadvantaged	7,569	33	6,727	89	1,061	14
Limited English Proficient	482	2	430	89	37	8
Total	22,825	100	19,813	87	2,436	11

Disclaimer from OCCS: "Not all colleges were able to identify students in these categories. More complete data are expected in the future as information systems evolve."

Note. (1) The total figures in different categories presented in this table are not mutually exclusive, i.e., students could be female as well as limited English proficient, and (2) Satisfactory progress is defined as maintaining a cumulative grade point average of 2.0 during the year.
Source: Carl Perkins Measurement Data.

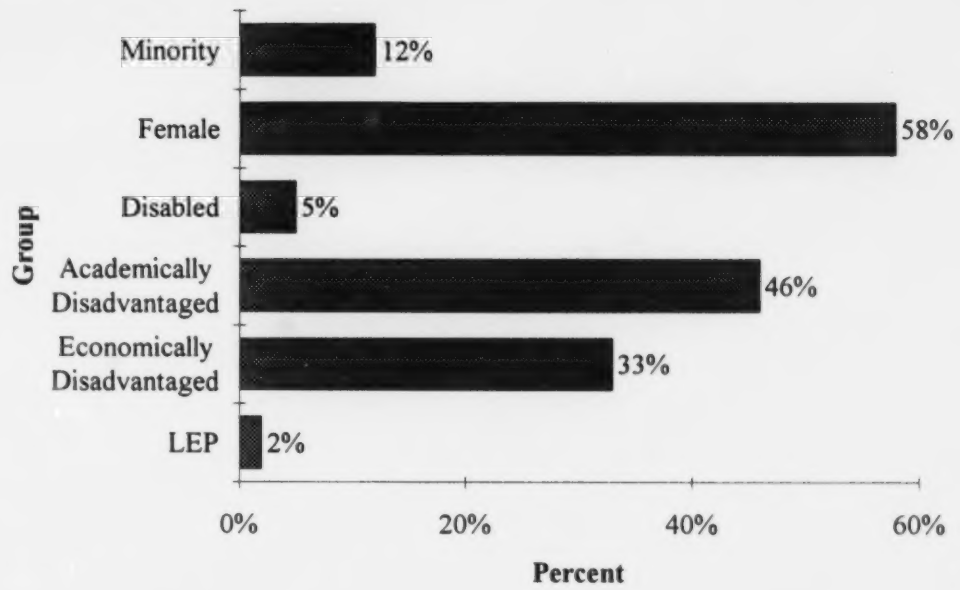
Secondary

Minority student enrollment in professional technical education has increased from 12 to 15 percent over the past three years. The greatest proportion of minority students (26 percent in 1991-92) is enrolled in health occupations.

The enrollment of disabled students in professional technical education has also increased—from 7 to 7.6 percent over the past three years. The greatest proportion of disabled students (36 percent in 1991-92) is enrolled in diversified occupations.

Among the special populations, academically disadvantaged students have the highest enrollment in professional technical education, representing 14 to 16 percent of the total enrollment. Economically disadvantaged students come in second with 7 to 8 percent, followed by limited English proficient students with approximately 2 percent.

Figure 5
Professional Technical Education Enrollment
at Community Colleges for 1991-92*



* Total Enrollment: 22,825.

The special populations do not show any consistent enrollment changes over the three-year period. Nor do they show sustained enrollment concentrations in any program areas, with the possible exception of (a) diversified occupations and (b) hospitality, tourism and recreation in which relatively high percentages of academically and economically disadvantaged students are enrolled.

There has been little change in the enrollment of female students over the past three years. Their enrollment has hovered around 46 percent of the total enrollment. However, there has been a consistent concentration of female student enrollment in the areas of child care, health occupations and clothing, averaging well over 75 percent of the total enrollment, a standard used by the U.S. Department of Education to define nontraditional areas for either gender. The patterns of female student enrollment in 2+2/Tech Prep programs are very similar to their enrollment patterns in the regular professional technical programs.

Postsecondary

The enrollment data show that statewide approximately one out of three community college students has taken one or more professional technical classes in each of the past three years. For the 1991-92 school year, close to 104,000 community college students fall in this category.

However, based on a more restrictive definition (see earlier discussion), only 22,825 can be considered as professional technical students. Of this total, a majority (58 percent) are female students. Close to one-half (46 percent) are academically disadvantaged, and one-third (33 percent) are economically disadvantaged. Minorities represent 12 percent of the enrollment. Disabled and limited English proficient students constitute, respectively, 5 and 2 percent of the enrollment.

A predominant majority (77 to 89 percent) of the students in these special needs groups are making satisfactory progress in their programs, maintaining a cumulative grade point average of 2.0 during the year. However, only a small proportion (8 to 17 percent) have participated in cooperative work experiences. See Figures 6 and 7.

Figure 6
Percent of Professional Technical Education Students Making Satisfactory Progress for 1991-92

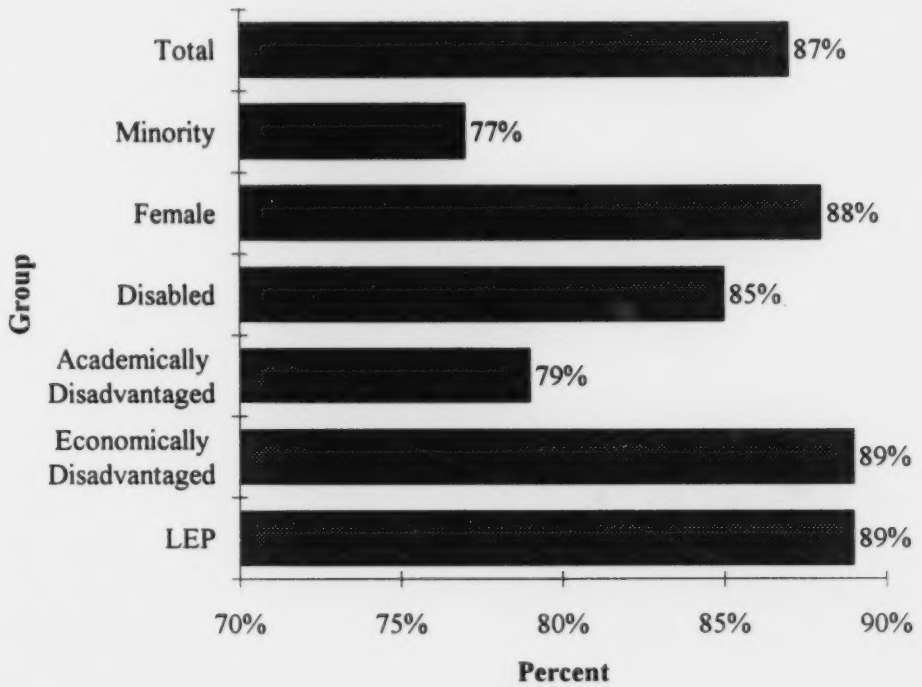
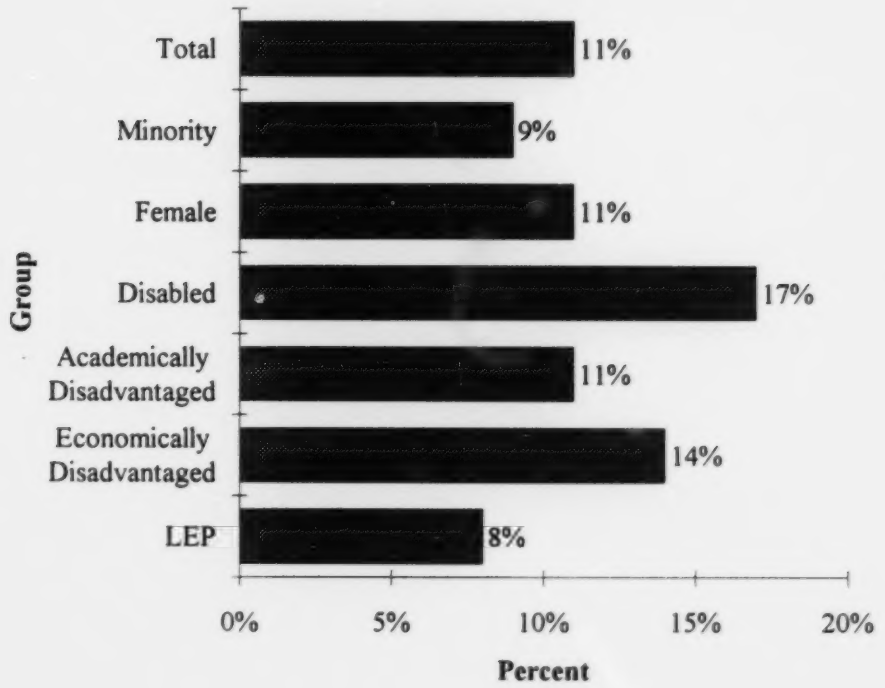


Figure 7
Percent of Professional Technical Education Students Participating in Cooperative Work Experience for 1991-92



WORKFORCE 2000 I AND II

The Workforce 2000 Acts of 1989 and 1991 provide support for workforce education and training programs that focus on professional technical education, programs for adult workers, and business, industry, and labor partnerships with Oregon's training systems. These programs reinforce the state's commitment to having the best trained workforce in the United States by the year 2000, and a workforce equal to any in the world by 2010.

Program Description

Funding and Areas of Emphasis

Workforce 2000 I programs, funded during the 1989-91 biennium, are shown in Table 14.

Table 14
Funding for Workforce 2000 I Programs

Program	Funding Level	Funding Source
2+2/Tech Prep	$2,360,000	General Fund
Secondary voc. tech. & science equipment	672,000	Lottery
Business/education partnerships	35,000	Lottery
Applied academics & technology education	263,900	Lottery
Structured work experience	101,500	Lottery
Business/industry internships	143,126	Lottery
Student leadership activities	101,453	Lottery
Community-Based Skill Centers	1,178,000	Lottery
Advanced Technology Center	600,000	Lottery
Business/Education Compact	50,000	Lottery
Literacy Line	150,000	Lottery
Total	$5,654,979	

Source: *Workforce 2000 I Summary Report*, OPTE, 1992.

In addition, $4,400,000 from the lottery fund was expended on community college equipment during the 1989-91 biennium.

Workforce 2000 II programs, funded during the 1991-93 biennium, are shown in Table 15.

Table 15
Funding for Workforce 2000 II Programs

Program	Funding Level	Funding Source
2+2 Tech Prep Programs	2,300,000	General Fund
Career development training for teachers and counselors	300,000	Lottery
Professional technical curriculum improvement (technology education, applied academics, workplace readiness)	200,000	Lottery
Business and industry internships for teachers and counselors	400,000	Lottery
Statewide preservice and inservice training for professional technical teachers and counselors	400,000	Lottery
Community-Based Skill Centers and Older Worker Training and Placement	1,600,000	Lottery
Professional technical student leadership skills	200,000	Lottery
Leadership for Change Institute	50,000	Lottery
Secondary professional technical equipment	675,000	Lottery
Science and math education (IISME)	100,000	Lottery
Developmental sites for secondary education reform	600,000	Lottery
VISTO (Volunteers in Service to Oregon)	50,000	Lottery
Advanced Technology Center	800,000	Lottery
Literacy Line	150,000	Lottery
Self-sufficiency financial aid	400,000	Lottery
Targeted training, key industry training and business, trade professional partnerships	1,575,000	Lottery
Occupational Program Planning System	400,000	Lottery
Worker Skills Assessment and Benchmarks	100,000	Lottery
Total	$10,300,000	

Source: *1991-93 Workforce Investments*, OPTE, undated.

In addition, $5,250,000 from the lottery fund was expended on community college equipment during the 1991-93 biennium.

There are areas of similarity and dissimilarity between Workforce 2000 I and II programs. For example, for both funding cycles, large proportions of the resources were devoted to the following efforts:

- 2+2/Tech Prep programs
- Secondary professional technical equipment
- Business and industry internships
- Professional technical curriculum improvement
- Community-Based Skill Centers
- Advanced Technology Center

In the areas of dissimilarity, a substantially higher level of funding was provided to support applied academics and technology education in Workforce 2000 I programs. On the other hand, a substantially greater amount of resources was devoted to the following areas in Workforce 2000 II:

- Implementation of education reform at the high school level (i.e., developmental sites for secondary education reform)
- Targeted training, key industry training and business, trade professional partnerships
- Staff development activities, including career development training for teachers and counselors, statewide preservice and inservice training for professional technical teachers and counselors, and business and industry internships for teachers and counselors
- Science and math education
- Worker skills assessment and Benchmarks

These new emphases are congruent with workforce development needs identified in the present study.

Program Participants

Existing data suggest that a large number of school staff and students participated in Workforce 2000 I program activities. Table 16 provides information on program participation by funding category.

Program Coordination

Grant recipients indicate that Workforce 2000 I and II funding has led to increased communication and cooperation between academic and professional technical instructors. Workforce 2000 programs encourage and, in many cases, require such communication and cooperation.

Workforce 2000 I and II funding has also resulted in better communication with business and industry. Many programs require communication with business and industry in planning and implementing program activities. Student and teacher internships also serve to strengthen communication with business and industry.

Table 16
Workforce 2000 I Program Participation by Funding Category

Program	Number of Staff Involved	Number of Students Served
2+2/Tech Prep	1,544	21,847
Secondary voc. tech. and science equipment	268	6,490
Business/education partnerships	46	1,943
Applied academics & technology education	538	8,754
Structured work experience	39	2,323
Business/industry internships	125	N.A.
Student leadership activities	332	2,588
Community-Based Skill Centers	55	500
Advanced Technology Center	116	457
Business/Education Compact	N.A.	N.A.
Literacy Line	17*	3,840

Source: Workforce 2000 I Summary Report, OPTE, 1992.
* 15 volunteers.

As a result of Workforce 2000 I and II funding, collaboration and cooperation among the following groups have increased:

- Public school administration and instructional staff
- Community college administration and instructional staff
- Business and industry
- Apprenticeship programs
- JTPA programs
- State agencies
- Local economic development agencies

In addition, there has been increased sharing between secondary schools and postsecondary institutions. Examples include:

- Sharing equipment, personnel, and facilities
- Joint curriculum planning, inservice, and implementation
- Coordination of student guidance services
- Use of regional advisory and/or planning groups

Program Image

Most grant recipients report that Workforce 2000 I and II has helped improve staff morale and the image of professional technical education among teachers, counselors, administrators, business/industry representative, and the community at large.

Curriculum Development

Grant recipients report that large numbers (in the hundreds) of new curriculum units or courses were developed or improved as a result of Workforce 2000 I funding. For example, the secondary level recipients report the development of 590 units and 223 courses. At the postsecondary level, 5,539 units and 218 courses were developed or improved.

These figures are based on project reports submitted by 17 secondary and 14 postsecondary Workforce 2000 I grant recipients. To the extent that units or courses may not have been defined by the grant recipients in a uniform way, they are probably not comparable across programs.

Best Practices

Grant recipients provide numerous examples of what they consider to be best services funded by Workforce 2000 I and II in the following areas:

- 2+2/Tech Prep programs
- Professional technical education curriculum improvement/development
- Cooperative work experience
- Secondary professional technical equipment
- Student leadership development activities
- Business and industry internships
- Advanced Technology Center
- Community-Based Skill Centers

Workforce 2000 I and II funding has enabled both secondary and postsecondary institutions to develop new programs or expand existing programs in these areas.

Program Impact

Grant recipients report that a variety of direct benefits have resulted from Workforce 2000 I and II funding. For example, at the secondary level, the funding has enabled them to:

- Initiate new programs, expand existing programs, and improve curriculum in professional technical education programs
- Increase communication and cooperation between education, government, and business
- Upgrade technical equipment (e.g., computer-aided drafting equipment)
- Increase teacher and student participation in professional technical education
- Provide opportunities for staff development
- Gain a better understanding of the national and international marketplace and increase the ability to respond to economic development priorities

At the postsecondary level, Workforce 2000 I and II funding has enabled grant recipients to:

- Improve articulation between high schools and community colleges
- Increase partnerships with business and industry
- Provide student internships and staff development activities
- Purchase updated equipment for professional technical programs
- Serve more and diverse groups of students

Summary

Both Workforce 2000 I and II programs have contributed to the development and refinement of 2+2/Tech Prep programs, a stronger connection with business and industry, the improvement of technology education as well as other professional technical curriculum, and the upgrading of equipment for professional technical education. Existing data suggest that Workforce 2000 I funding has made it possible to provide professional technical education services to a large number of students. The funding has enabled grant recipients to develop new programs, improve existing programs, improve communication between academic and professional technical teachers, increase business/industry involvement, increase program coordination, improve the image of professional technical education, and boost the morale of service providers.

Workforce 2000 II programs have placed increased emphasis on business-education partnerships, staff development, science and mathematics education, assessment of program outcomes, and the implementation of education reform at the secondary level. The increased emphasis is congruent with workforce development needs identified in the present study and serves to reinforce the state's commitment to having a globally competitive workforce by the year 2010.

III. FIELDWORK RESULTS

Interviews with Key Players

Focus Groups

Survey of Stakeholder Groups

Case Studies

INTERVIEWS WITH KEY PLAYERS

INTRODUCTION

Interviews were conducted with selected policymakers in the executive and legislative branches of state government and administrators of relevant state agencies. These individuals are referred to as "key players" in this section of the report. Most of the interviews were conducted over the telephone; a few occurred onsite. Each interview lasted approximately 30 minutes. The following key players were interviewed:

Bob Baugh, Economic Development Department
Nita Crimins, Department of Education
Bev Fitzpatrick, Department of Education
J. D. Hoye, Department of Education
Marilyn Johnston, Workforce Quality Council
Marilynne Keyser, Office of the Governor
John Lattimer, Legislative Fiscal Office
Debbie Lincoln, Office of Community College Services
Tami Lohman, Legislative Trade and Economic Development Committee
Margie Lowe, Executive Department
Tom Lynch, Employment Division
Mike Marsh, Executive Department
Holly Miles, Sate Advisory Council on Career and Vocational Education
Cam Preus-Braly, Job Training Partnership Act
Quint Rahberger, Bureau of Labor and Industries
Joyce Reinke, Department of Education
Vern Ryles, Workforce Quality Council
Joan Stoddard, Department of Education

During the interviews, key players responded to six main questions:

1. How would you describe the current status of professional technical education and workforce development programs in Oregon?

2. As you see it, what are some positive features of the current professional technical education and workforce development programs?

3. In your perception, what are some significant accomplishments of these programs?

4. In your view, what are some of the major concerns, problems, and issues?

5. What can be done to address these concerns, problems, and issues?

6. What would you do to improve these programs?

What follows is a summary of their responses to these questions.

CURRENT STATUS OF PROGRAMS

Scope

Key players describe existing professional technical education programs, especially those at the high school level, as limited, narrow, and inconsistent. Several key players note that, while some schools are moving toward a professional technical emphasis, many others are not. Some schools' programs are in line with where the state's economy is heading; others are not. Even in those schools where the focus is shifting to professional technical education, courses are often disconnected and, as a result, they fail to provide students with the skills needed in the workplace. They also fail to provide students work-based learning opportunities. Community college professional technical education programs were viewed more favorably. The key players note several important features of community college programs: They respond to customer demand; they effectively use labor market information; and they provide students with specific skills.

Perceptions

Aside from the programs themselves are people's perceptions of professional technical education. People still largely equate professional technical education with their stereotypes of traditional vocational education programs such as woodworking, metalworking, auto shop, sewing and cooking—not the type of education required of high-wage, high-skill jobs.

Several key players describe the current programs as in transition and flux. Professional technical education and workforce programs are changing in several dimensions. There is a growing awareness and recognition of the importance of these programs. Workforce programs are undergoing an image change. More and more people at the local and state levels consider workforce programs as important as academic programs.

The School Reform Movement

As most key players note, Oregon has a blueprint for change spelled out in:

- HB3565 which restructures much of the state's education system
- HB3133 which creates the Workforce Quality Council, a council made up of business, labor, and government representatives charged with developing a system out of many separate workforce development and education programs
- The Oregon benchmarks program which identifies a number of human investment goals for the state

Much work remains to make this blueprint a reality, though. Major changes are underway in kindergarten through university level programs. Programs are becoming aligned across levels and providing more training in broader skill areas than specific skills.

So far, according to the key players, the reforms have succeeded in bringing people together in new ways to work on their implementation. The reforms have also brought additional people to the table, notably business and labor. As one key player notes, the private sector is no longer just pointing the finger; it recognizes the need to participate in the solution.

A more fruitful dialogue is occurring between education and business, resulting in significant partnerships. Increasingly, business is becoming more involved and playing a more significant role in the design of workforce programs. Going beyond rubber stamping, they are defining business needs and validating educational outcomes for specific programs. Workforce programs are attempting to be responsive to labor market trends by creating programs that better match with labor market needs.

Among the initial steps being taken to implement the reform blueprint are:

- Formation of task forces to help with implementation of various aspects of HB3565, including the certificates of initial and advanced mastery, the school-to-work transition, alternative learning environments, and integration of social services.

- Information campaigns designed to increase awareness of the reforms as well as the importance of professional technical education and workforce development to the state's economy. The Department of Education is conducting meetings around the state to increase the percentage of Oregonians familiar with the reforms from less than one percent to 12 to 15 percent over the next two years. Other means of promoting the reforms include EdNet broadcasts, videos, newsletters, and news articles.

- Development of pilot sites, which are testing such concepts as certificates of initial mastery and portfolio assessments before they are implemented throughout the system.

- Development of a cross-functional management system, which brings people from various agencies together to work on specific tasks associated with the reforms.

- Establishment of regional workforce quality committees and development of an integrated planning process, which are designed to improve service delivery at the local level.

- Survey of Oregon employers regarding a wide range of workforce development and education issues, including work organization.

Based on these efforts, key players report that a change in attitude is beginning to take place among both providers and users regarding the status of professional technical education and workforce development programs.

POSITIVE FEATURES AND ACCOMPLISHMENTS

A Blueprint for Reform

Several key players view the state having a blueprint for reforming its professional technical education and workforce development programs as a positive sign. Among the features of this blueprint highlighted by the key players are:

- Expanded professional technical education programs that cover more occupations and industries
- Greater consistency across schools
- Linkages between high school and community college programs
- Structured work experience
- A focus on high-wage, high skill jobs

One key player notes that *"every part of HB3565 is already being done somewhere by somebody... a school, a teacher, a class."* This is seen as a positive step but also a major concern. The reforms need to be made systemic.

Current reform efforts cause people to work together in new ways and involve more people in workforce development and education. Education, training, economic development, and human resource programs have been brought together at the state and local levels. As one key player notes, *"People, programs, and agencies are not working at cross purposes, but are all working together."* This degree of cooperation, notes another key player, creates an environment in which change is possible and other reforms are promoted. The use of a matrix management system, which helps manage reforms across agency lines, promotes this communication and cooperation.

Several key players view the piloting of reforms positively. For example, the changes called for in HB3565 are being piloted at selected school sites. This will enable policymakers to see what works and what does not work, before implementing changes systemwide. One key player suggests that three things are key in moving from pilot testing to systemic change:

1. Fund pilots on a competitive basis, with the stipulation that pilots demonstrate how they will bring about systemic change
2. Provide incentives for an integrated planning process at the local level
3. Maintain the capacity of the system to respond to change

Community Colleges

Policymakers frequently cite community colleges as a positive feature of professional technical education and workforce development programs. They describe community colleges as "innovative," "initiators of change," "important partners," "responsive to local labor market needs," and "focused on community needs."

Professional technical education programs at community colleges are viewed as high quality and leading to the development of specific skills. Community colleges also receive high marks for developing Tech Prep/Associate Degree (TPAD) programs in partnership with high schools. Other positive characteristics of community colleges are their broad mission, wide geographic coverage, and institutional capacity.

Special Populations

Workforce development programs such as JOBS and JTPA are noted for their focus on helping target populations (e.g., teen parents, welfare recipients, and dislocated workers) receive the education and training they need to re-enter the workforce and become self-sufficient. One key player notes that special population groups used to be excluded from education and training programs. *"We've changed from looking at people's disabilities to what their abilities are."* Different target groups have different needs, though. Dealing with these differences requires flexibility in service delivery. *"We try to put people in boxes, but they don't always fit."*

Another positive step is the effort made to measure outcomes. For example, how many people get jobs, what kind of jobs do they get, and how much do the jobs pay? Also, by using the existing delivery system, these programs, one key player notes, leverage the investment in this system to meet the needs of their clients.

Dedicated Staff

Program staff are also viewed positively. "Professional" and "dedicated" describe staff within the professional technical education and workforce development system. As a result, improving the system is largely a matter of structure, not quality of service, according to one key player.

Furthermore, the reforms are viewed by some as having a positive impact on professional technical educators who for years have been treated as "second class citizens" according to one key player. This is changing with the increased emphasis on workforce development and education.

Instructors in professional technical education are seen as committed individuals who have believed in the field regardless of the opinions of academic educators and community members. Over the past few years, a major accomplishment has been the improved status of professional technical teachers—they are being seen as "significant." They have

become re-energized because of the changing perceptions about new ways to teach. Their teaching experience has given them a new status, with partnerships being built with business and industry.

Workforce Funding

Some key players see workforce funding at the state level as a significant accomplishment. With a history of being unsupportive, the state legislature reversed its position and in 1989 appropriated special funds for Workforce 2000. This showed state support of professional technical education. Other monetary accomplishments included allocations for equipment and technology centers.

Workforce Quality Council

Key players view the Workforce Quality Council as another positive feature of change. The Workforce Quality Council—which brings together business, labor, and government—helps pull the state's workforce development and education programs together into a more focused, rational system.

Articulation

Over the past four to six years, more high school programs have been linked to community college programs through 2+2/Tech Prep and Tech Prep/Associate Degree (TPAD) programs. There has been an increase in communication between high school and postsecondary programs about specific outcomes, resulting in articulation agreements and less duplication of services. However, establishment of these agreements has been irregular around the state and a smoother transition between high school and college is still needed in most areas. Also, with limited budgets, high schools and community colleges are realizing that they cannot be responsible for delivering all services and have started the process of collaboration with businesses and other agencies (e.g., JTPA and JOBS) in the development and delivery of programs. Workforce programs have begun to develop continuous delivery systems across educational levels and among businesses and agencies.

Increased Involvement of Business

Businesses realize that the workplace is changing. Certain skills are no longer relevant, and in the future there will be a shortage of employees with needed skills. They also recognize that education is changing and see they have a role in reshaping it. Businesses have increased their involvement in making policy decisions by increased participation on advisory committees . At this time only about 10 percent of businesses, mostly large ones, are actively involved. There is a need to reach the small/medium-sized businesses.

Applied Academics

Educators are gradually realizing the importance of applied academics. Increasingly, more schools are taking a look at teaching academics in a work-related context. The professional technical programs are integrating academics into their curricula..

Teacher Internships

Several key players see teacher internship programs as a very positive feature of workforce programs. Their strength lies in the excitement they generate among teachers. They build relationships between education and business and promote teacher understanding of the skills needed for today's workforce. Internships help to break down negative attitudes toward workforce education and enhance communication.

Other Features and Accomplishments

Other positive features and accomplishments mentioned by key players are:

- ***Oregon's first Advanced Technology Center.*** The center focuses on modernization and worker training issues. The center houses offices, classrooms, and shop floors. It buys the latest equipment related to the region's industrial needs—metals and machining are two—and then conducts classes for both students and workers on specific equipment. Firms can test the equipment by doing production runs on it. If a firm buys equipment, its workers can train at the center. The center also helps install equipment, provides classes in Total Quality Management and high performance work organization, and sponsors seminars and conferences.

- ***2+2/Tech Prep programs.*** The number of 2+2/Tech Prep programs has increased.

- ***Workforce 2000 programs.*** These programs have included teacher internships and structured work experience programs.

- ***"2020" school improvement and professional development grants.*** These grants have enabled teachers to request, and the State Board of Education to grant, waivers from certain state rules and regulations.

- ***EdNet.*** This service makes it possible to offer courses via a telecommunications network, and to connect schools with one another, which is particularly important in rural areas of the state.

- ***Regional workforce quality committees.*** The structure of these committees promotes a bottom-up, rather than a top-down, approach to reform. There is a move toward an integrated planning process, which brings together business, labor, providers, and others at the regional level to develop a comprehensive plan

and to identify gaps in funding. What is now needed, several key players note, is to provide the funding to fill these gaps. Funding has been requested for the 1993-95 biennium.

MAJOR CONCERNS, PROBLEMS, AND ISSUES

Involvement of Business, Industry, and Labor

A major concern cited often is the limited business and labor involvement in professional technical education and workforce development programs. Much of the reform effort to date has focused on making sense of public education and training programs. However, a private sector strategy is essential. For example, schools have begun planning changes in the classroom portion of professional technical education programs, but delivery strategies need to begin on the workplace portion of these programs, which require structured work experience. As one key player points out, one of Oregon's Benchmarks calls for about 30,000 students to participate in structured work experience by the year 2000. At present, no more than a few thousand students receive structured work experience.

The reforms require the active participation of business and labor. Several initiatives have been launched by the Economic Development Department to help organize business and labor around workforce development and education issues. These include the Key Industries program, the Oregon Quality Initiative, and the Oregon Employer Survey. But more needs to be done.

Increasing business and labor participation, according to one key player, will require clarity about what business and labor can provide. They will also need to receive something for their efforts and feel as though they're having an impact. Another key player notes that the private sector has specific needs. To the extent that programs meet these needs, the private sector will be willing to work with them.

A related concern is that most existing professional technical education and workforce development programs focus on either those just entering the workforce or those who are, at least temporarily, out of the workforce. Greater attention needs to be paid to those *in* the workforce.

At present business and industry do not recognize the importance of their roles in the current educational reform movement. Incentives need to be provided to business and industry to increase their participation. They need to understand that their involvement will benefit them.

Coordination

Key players identify continued lack of coordination and integration as a concern. Despite efforts at restructuring the system, there are still over 40 workforce education and training programs spread among 17 state agencies. As noted by several key players, this is due, in part, to the way programs have been established and funded. It is particularly true of federal programs such as Carl Perkins, JTPA, JOBS, and Employment Division, which are structured separately and have little common focus. Fragmentation makes change more difficult.

Two actions are suggested to address this concern. First, submit one state plan to the federal Departments of Education, Labor, and Health and Human Services, rather than separate plans to each agency. This will require getting waivers from certain federal requirements. Second, create a separate state department that brings together most of these workforce programs. The Workforce Quality Council has recommended placing community colleges, JTPA, corrections education, dislocated worker programs, JOBS, and Trade Adjustment Assistance in a newly created state Department of Community Colleges and Workforce Development.

A related concern is program coordination across educational levels. There is a lack of strong links within the education ladder—middle school, high school, community college, and university. More programs need to be developed at the middle school level with strong links to high schools and community colleges. Also, regions are in need of overall guidelines from the state.

Another concern is geographic boundaries. Students should be allowed to cross community college boundaries if other programs will better meet their needs. Re-examination of boundaries, more cooperation between community colleges in different regions, and more flexibility will facilitate the provision of services across regions.

Use of Labor Market Information

Even though the state has operated an effective Occupational Information Coordinating Committee for a decade, the limited availability and, more importantly, use of labor market information are still concerns. Key players identify several important uses of such information. Educational administrators and other policymakers within the workforce development and education system can use labor market information to make decisions about their programs. Teachers, instructors, and counselors can use it to help students and other program participants make decisions regarding job opportunities. Policymakers can use it to evaluate the effectiveness of workforce development and education programs. It can help answer such questions as: How many program participants are employed? What kinds of jobs do they have? And how much do they earn?

Assessment of Outcomes

Two related concerns mentioned by most key players interviewed are the lack of measurable outcomes for workforce development and education programs and the absence of a shared information system. At present, programs collect different data and information or use different definitions, thus making it difficult to measure overall performance. Key players identify several barriers that must be overcome in developing a shared information system. Among them are confidentiality and other statutory concerns, inertia, and politics. An interagency study committee is currently addressing this need.

Dropouts

Several key players express concern that an estimated one-quarter of all students drop out of school. The education system has a "throw away" mentality, says one key player. Instead of assuming some young people can't learn or don't belong in school, all must commit to the principle that everyone can learn. Another key player notes that most of the 25 percent who drop out are noncollege-bound students, and they drop out because there is nothing in school for them. Still another notes that *"With a 25 percent drop out rate, the schools have a defective product. If a business had a 25 percent defect rate, it would restructure. The same is required of schools."*

Higher Education

Several key players mention higher education as another major concern . They perceive it as isolated from the state's workforce development efforts. Higher education personnel, one key player notes, are "a real barrier" and do not see the importance of or give value to workforce development.

There are at least three ways in which higher education's participation is critical to advancing professional technical education and workforce development reforms, according to the key players. First, higher education, through its academic policies, has an impact on the rest of the educational system. For example, professional technical educators and higher education staff differ over the occupational strands that have been proposed as part of the implementation of HB3565. These strands do not distinguish between college-bound and noncollege-bound students. Higher education staff reportedly prefer maintaining a separate college track.

Second, higher education provides pre-service and in-service training to teachers through its education programs. Several key players note that changes in teacher training are an important part of the reform effort. Some colleges and universities are doing innovative things in this area, but others are not.

Third, higher education has a research and development capability that can be brought to bear on public and private efforts at workforce development. For example, higher education research can help the private sector pursue value-added opportunities in the

state's natural resource-based industries. It can conduct research to help government tackle pressing public policy issues.

As one key player notes, *"What's needed is a seamless educational system that includes higher education."* Another says, *"We need to have all three segments of the education system working together."*

Time

Traditionally, the educational system has not provided teachers with the planning time needed to make reforms happen. Planning took place outside of regular school hours. According to one key player, if reforms are to be made to the system, the system needs to allow for planning time. Some schools are starting to provide this. Portland's Roosevelt High School, for example, is a test site for selected occupational strands being developed as part of the certificate of advanced mastery. There, teachers meet every Tuesday from 8:00-10:00 a.m. to plan for implementation of the occupational strands.

Several key players note that workforce development and educational strategies are, by their very nature, "long term." Yet, a long-term perspective is at odds with the legislature, which is interested in an immediate return on the dollar. One key player comments that some people look at workforce development and education strategies as "flash in the pan," thinking they can ride them out. Most key players agreed that the 1993 session of the legislature will be a critical time. If the reforms are kept in place, people will take notice.

Other Concerns and Problems

Other concerns, problems, and issues identified are:

- ***The lack of youth apprenticeship or pre-apprenticeship programs.*** In establishing youth apprenticeship or pre-apprenticeship programs, the issues of skill requirements and liability insurance will need to be dealt with. Business and labor will need to be fundamental partners in this effort.

- ***The lack of matching funds for equipment.*** State funds have been allocated for the purchase of new high school equipment, without any requirement that there be matching funds or donated equipment. According to one key player, funding for new equipment should be matched by the private sector or, at a minimum, purchase of such equipment should be reviewed and approved by the private sector. The benefits are several: it gets the private sector involved in professional technical education programs at the local level; it ensures schools that the equipment they purchase meets industry needs; and it gives students the chance to work on equipment they will use in the workplace.

- ***Confusion regarding overall program direction.*** The confusion seems to stem from a lack of coordination between the regional consortia and the Workforce

Quality Council in setting program directions. In addition, professional technical staff at the high school and postsecondary levels receive directives from both the Workforce Quality Council and the State Board of Education, leading to further confusion.

- ***Unclear definition of professional technical education expectations.*** No clear definitions of purposes and outcomes have emerged from the field. Educators are still struggling with unclear meanings and unclear standards. For example, confusion exists about the meaning of "world class standards." According to some key players, professional technical education needs to define its goals more clearly.

- ***Lack of trust among state and local agencies.*** In maintaining a balance between the state and local levels, more trust needs to be developed. According to some key players, an atmosphere of suspicion currently exists between state and local agencies, creating a barrier to program development and implementation.

- ***The rigidity of school schedule.*** This presents problems in providing work experience. The school day (8:00 a.m. to 3:00 p.m.) and the school year (September to June) are not aligned with how businesses operate.

- ***The lack of credits for professional technical education courses.*** In many cases, postsecondary institutions may not accept credits for learning that occurs in professional technical education programs. Educators may not realize the value of integrating academic and professional technical subject matter.

- ***Confidentiality issues.*** Existing laws on confidentiality can be a barrier. For example, integrated case management to provide education and human services across agencies is prohibited by confidentiality laws. Also, the right-to-privacy laws restrict sharing information across agencies.

SUGGESTED IMPROVEMENTS

Key players provide a wealth of suggestions for improving the relationship between professional technical education and workforce development programs.

Invest in Staff Development

Several key players note that changes in professional technical education and workforce development programs will mean changes in the way teachers and others do their jobs. This will require investing in staff development.

Teachers, for example, need time during regular work hours to plan for implementation of the reforms spelled out in HB3565. In addition, changes are needed in teacher training, both pre-service and in-service. One suggestion is to provide teachers the chance to gain

work experience in their fields, which will enable them to keep current on changes in technology and work requirements.

Others in the professional technical education and workforce development system will also need to change how they do their jobs; they, too, will need further training. For example, members of the school site committees and the regional workforce quality committees will need leadership training to take on their new roles and responsibilities. (Such a center called the Oregon Professional Development Center has been created at Lane Education Service District in Eugene. Oregon State University and Portland State University are reportedly working on developing such a leadership development program.)

Some key players express a need to raise standards for receiving credentials. For example, people coming out of industry should receive training in pedagogy and skills for dealing with young people. An alternative process for credentialing is needed to recruit people from business and industry as instructors.

Pre-service and in-service for all teachers should include information about professional technical education and options available to students. Also, teachers need training in how to incorporate applied academics.

More resources should be allocated to teacher and counselor internships to break down negative perceptions of professional technical education, to build relationships with businesses, and to provide first-hand experience with skills students need to be part of the workforce.

Expand Business and Labor Involvement

Virtually all key players interviewed mention the need to expand business and labor involvement in professional technical education and workforce development programs.

As already noted, the reforms to date have focused primarily on making sense of public workforce development and educational policies and programs. There needs to be a private sector strategy as well. There are several aspects to such a strategy. For example, if professional technical education programs are to work, employers must provide students with structured work experience. They must also provide students completing these programs with the type of high-skill, high-wage jobs for which they have been trained. This will require changes in the way work is organized.

According to most key players, although some initiatives have been undertaken to help organize the private sector around education and training issues, more needs to be done. One suggestion is to hold a series of summits around the state to bring business and labor together to lay out the state's workforce development strategy; to get input on how to make the system more responsive to their needs; to spell out the roles that business and labor can and must play, particularly in regard to the existing workforce; and to get

pledges of support (for example, an agreement to provide students with structured work experience).

Business and industry need to make stronger time and money commitment. Education cannot take care of all workforce training needs. Some key players indicate that a tax on business and industry could provide funds for re-training purposes. Others point out that business and industry need incentives (e.g., a tax credit) to provide training onsite.

Other key players feel that education and business need to get together to look at workforce needs and to discuss issues facing both education and business. A broader group of people should be involved to promote a sense of ownership.

Develop Industry-Based Skill Standards

Industry-based skill standards can, as one key player puts it, serve as "a warranty system," a guarantee that program participants are ready for work. Developing these standards requires business and labor participation. At the federal level, the Commission on Work-Based Learning is presently working with business organizations, labor unions, and trade associations to develop industry standards.

Provide More Structured Work Experience

Additional resources are needed to support work experience coordination and develop work sites. Current personnel and funding are already stretched thin. Staff are too extended to put work experience on the top of their responsibilities. Also, there is a need to identify other funding sources and consider the use of community volunteers to help support this effort.

Improve the Availability and Use of Labor Market Information

Several key players note that labor market information needs to be more widely disseminated to and used by policymakers, educational administrators, teachers, counselors, students, parents, and the general public. Labor market information can also serve as an indicator of the effectiveness of professional technical education and workforce development programs.

Review Existing Programs to Improve Program Planning and Coordination

According to some key players, existing professional technical programs need to be reviewed to determine whether they are consistent with the new directions set by educational reform. More programs and new kinds of curriculum need to be developed as part of the reform movement. Some key players note that currently the state lacks the right mix of programs to meet the requirements for reform. The alignment of funding as it

relates to duplication of services is another area needing attention. An attempt should be made to reduce duplication without stifling innovation.

Develop a Shared Information System

A shared information system, which is presently being developed, will make it possible to measure the performance of the workforce development and education system. There are other benefits as well. A shared information system should improve service delivery by making it easier for people receiving services to move through the system. Developing a shared information system is a long-term project, one which will require overcoming many barriers. The key players interviewed place a high priority on this project.

Take a Long-term Perspective

An almost universal comment from the key players interviewed is that workforce development is a long-term strategy. Therefore, policymakers, especially legislators, must take a strategic, long-term approach to the issue. We cannot, as one key player notes, continue to have a "session-to-session mentality."

Other Improvements

Other suggestions for improvement include:

- ***Budget.*** Use a "return on investment" approach to budget decisions, with an emphasis on prevention rather than maintenance programs.

- ***Increased Use of technology.*** For example, use of EdNet can expand course offerings and improved connections between the classroom and the workplace .

- ***Information Dissemination.*** Publicize "best practices," particularly at the practitioner level. Disseminate program information to educators and the community at large. General awareness of professional technical education needs to be increased. Even though educational reform has a strong emphasis on professional technical education, some schools continue to eliminate professional technical programs, and communities do not see the value of these programs.

- ***Support Services.*** Provide students the support services needed for all to achieve the new educational standards embodied in HB3565.

- ***Publicity.*** Conduct a public education campaign on the skills gap. Tell what it means in a global economy, and how the reforms aim to improve this situation. Notes one key player, *"The more people you involve, the more stakeholders you have, the more likely you are to succeed."*

Increase public awareness of professional technical education in general. There is a need to use marketing strategies (beyond National Vocational Education Week) to increase the awareness of educators, parents, students and the community at large about the value and importance of workforce programs. Television, radio, magazines, and other local media can be used for this purpose. Also, a stronger network among school boards, parents, and teachers can be forged to help market professional technical education. Too many people are still unaware of what is happening in this field.

- ***Guidance and Counseling.*** Re-examine the role of guidance and counseling. One focus might be to disseminate information on careers, training programs, and job options. Guidance counselors might work with parents and provide them with information on career opportunities for themselves and their children.

- ***Stronger curriculum alignment and credit transfer across educational levels.*** For example, stronger links need to be established between community colleges and universities . As more students are attending community colleges, more staff and resources may be shifted to that level. Enrollment at four-year institutions may be restricted to the junior, senior, and graduate levels. Students should be allowed to transfer across community colleges and four-year institutions both in and out of state. Clearer guidelines are needed to facilitate credit transfer.

- ***Increased communications among state and local agencies.*** There is a need for open and honest dialogues among agencies. For example, cross-functional teams working on common problems can help break down resistance. This would get people from different agencies working together, promoting trust between state and local levels. Also, by increasing state assistance to the local levels, relationships between the state and local agencies would be enhanced.

FOCUS GROUPS

INTRODUCTION

Originally called focused interviews, focus groups have been widely used as a research tool in the social sciences since World War II. While focus groups can be useful at any point in a research program, they are particularly useful for exploratory research where relatively little is known about the phenomenon of interest. Focus groups usually collect qualitative data as their primary purpose. Their major strength is to produce a rich database in the respondents' own words and context. Unlike survey questionnaires, focus groups allow participants to qualify their responses or identify important conditions associated with their comments. This provides a measure of ecological validity not found in traditional survey research.

The contemporary focus group typically consists of 6 to 12 individuals who discuss a small number of issues related to a phenomenon of interest. The discussion is directed by a moderator who promotes group interaction and assures that the discussion remains on the topic.

In the present study, focus groups were conducted to obtain the perceptions of key people in each region about workforce training issues. Two focus groups (one for service providers and one for service recipients) were conducted in each of the 18 regions. Service providers included:

- Program administrators (including those from JTPA, JOBS, PIC, and Carl Perkins programs)
- Teachers and counselors (including vocational and academic staff familiar with applied academics or Tech Prep programs)

Service recipients included:

- Students (including those in applied academics or Tech Prep programs at high schools or community colleges)
- Parents of professional technical students
- Business/industry/labor representatives
- Workforce Quality Council members
- Community members (including such stakeholders as school site committee members or other people active in community affairs)

Focus group participants were identified and recruited by the respective regional coordinators according to technical guidelines provided by the NWREL evaluation team. The regional coordinators also assisted in attending to logistical details (e.g., meeting time and place) for each focus group session. The focus groups were moderated by a NWREL staff person. Each focus group session lasted approximately 90 minutes.

The focus groups provided an informal and enjoyable way to obtain important information on such topics as: ways to improve workforce training; incorporation of applied

academics; structured work experience; involvement of business, industry, labor and other stakeholder groups; regional consortia; program coordination; and exemplary practices.

The following sections present findings obtained from focus group discussions and individual interviews with key administrators who did not participate in the focus group discussions. The findings are presented separately for focus group discussions conducted with service providers and service recipients, and interviews with regional coordinators and community college deans.

The findings represent patterns and trends in what the field researchers heard and observed during the focus group discussions and interviews with administrators. They are not conclusions or recommendations of the evaluation team.

SERVICE PROVIDERS

A total of 156 individuals participated in the focus group discussions for service providers conducted in each of the 18 regions during November and December 1992. Results of the discussions are presented below

Program Improvement

Focus group participants identify a range of areas in which improvement has occurred.

- **Visibility**—Service providers believe that professional technical education is finally recognized as an important school reform issue. The legislative mandate to place greater emphasis on professional technical education has heightened public awareness. HB3565 and the grants coming out of it have also been a catalyst for change.

  Stakeholder groups (e.g., business leaders, students, and teachers) are starting to care more about workforce programs. There is general optimism that professional technical education programs are headed in the right direction.

- **Resources**—Resources for professional technical education and workforce training have increased over the past several years. The grant money has facilitated many improvement activities. For example, Workforce 2000 funds have been used to fund staff development activities, to upgrade equipment, and to initiate new programs. Many high schools have received new equipment through Workforce 2000 funds.

- **Coordination**—More cooperation exists between business and education agencies. They are working together to provide students with training and work experience as well as summer internships for teachers.

  There is increased continuity and articulation between high school and community college programs. In the last few years, the number of TPAD articulation agreements between high schools and community colleges has increased.

  Support and sharing through the regional consortia have facilitated coordination. Regional decisionmaking has been beneficial. School districts want to maintain local control, and this is accomplished through the consortia.

- **Business Involvement**—A general perception exists that relationships between education and business have improved over the last few years. Educators are listening to business leaders and taking their advice on how to better prepare students for the "real world." In addition, teacher internship programs have allowed high school teachers to spend summer months working in business and industry in fields related to their teaching.

- **Teacher Attitudes**—Teacher attitudes have become more positive. Teachers are getting used to change. In accepting the need to change, they are realizing that change is important and healthy.

- **Services to Special Populations**—Services to special populations have improved. Some Workforce 2000 programs have focused on getting at-risk populations on a career track. In addition, JTPA money has provided structured job experiences for special needs students. Some community colleges offer retraining and upgrading of skills for dislocated workers.

- **Applied Academics**—Applied academics has been increasingly integration into the school curriculum. Examples include Principles of Technology, Applied Mathematics, and Applied Communication. In addition, CORD curriculum materials as well as teacher-developed curricula have been integrated into professional technical education programs. This has helped improve the quality of the programs.

- **JTPA**—Over the past few years, JTPA has focused on higher quality training and retention. For example, it has adopted a competency-based approach and lengthened pre-employment training. In addition, a strong partnership has emerged between JTPA and community colleges. In one region, for example, the community college and JTPA are working on the development of an integrated technology program.

Many obstacles stand in the way of progress and improvement. The focus group participants identify the following as examples:

- In some cases, turf battles have made it difficult to get groups to work together.

- There is a need to retrain teachers for professional technical education.

- A lack of resources makes it difficult to upgrade equipment available to students.

- There is some mistrust between state and local agencies. According to some participants, there is a lack of flexibility on the part of state agencies.

- An estimated 60 percent of current teaching staff will not be teaching by the year 2000. Some of these teachers may resist change.

- Transportation problems, particularly in rural areas, hinder progress.

- The pace of change can be overwhelming to teachers.

- At present, the regions compete for the same dollars. This creates rivalries among school districts and counties.

- Hindrances in rural areas include distance between agencies, lack of funding for travel, and economic changes (e.g., businesses and industries leaving the area).

- Schools are still preparing students for four-year college programs. According to some participants, little change has occurred with respect to providing students with career guidance. Many counselors lack knowledge about professional technical education and job opportunities.

- Some regions lack administrative support.

- Some regions lack coordination among JOBS, JTPA, and school districts.

- Academic teachers act and think as if all students were going to attend a four-year college. Parents are viewed as not interested in talking about workforce education. Attitudes are a problem. As one respondent puts it:

  The term "vocational" has a blue collar stigma attached to it. We have to come to terms between the need for academics and professional technical preparation....We are asking people to make a big leap in their thinking. Changes are happening, but people have to be committed to change. Staff development is essential because attitudes don't change automatically. Educators must deliver workforce education and training in a manner convincing to students.

Applied Academics

The integration of applied academics varies widely from region to region and, within a region, from district to district. In some regions, applied academics classes (e.g., Applied Mathematics or Applied Communication) are offered in virtually every high school. In other regions, applied academics courses are not a priority and offered in a minimal way.

In many instances, applied academics are incorporated by individual teachers. For example, teachers may work together to team teach applied academics. In other cases, applied academics are part of an established program (e.g., Applied Mathematics is part of an integrated technology program). Another example is the integration of applied English in a bilingual welding program at one community college.

The focus group participants identify a range of obstacles to integrating applied academics in the school curriculum, including:

- Academic teachers do not see applied academics as important. They are more concerned with getting students into a four-year college.

- Many teachers need retraining to teach their subject areas in a work-related context. At present, there is not enough time during the school year to retrain teachers.

- School schedules and a lack of qualified teachers are barriers to incorporating applied academics. This is particularly true for small high schools.

- There is not enough instructional time to teach applied academics. If something is added to the curriculum, something else must go.

- Applied course work is not always accepted by the university system.

- Teacher certification has hindered applied academics because teachers need to have dual certification to teach two content areas.

- There is a lack of trust between high schools and community colleges.

Structured Work Experience

While business and industry have been helpful and cooperative in providing structured work experience for teachers and students, there is room for improvement.

At the high school level, structured work experience is usually set up by individual teachers and, as a result, is rather limited. Teachers do not have sufficient time to set up the programs on their own. In most cases, the experience is provided without a training plan, and students do not receive supervision or credit.

Many of the work experience programs offered at community colleges are better established. For example, most business partnership programs provide cooperative work experience.

Some JTPA programs provide work experience for special needs students. These students are supervised by the school coordinator. Some JOBS programs also provide work experience in approved professional technical programs.

Specific examples of structured work experience include:

- Job shadowing
- Work co-op credit programs
- Mentorship programs
- Building courses in which students engage in home construction
- JTPA's summer work experience program for economically disadvantaged youths
- High school cooperative work experience

Focus group participants identify several barriers:

- There is a general lack of coordination. Businesses are often flooded by requests from schools which operate independently of one another. Many participants indicate a need to have a district or regional administrator to coordinate contacts with business.
- There is no release time for students and employers to get together to discuss outcomes of the work experience.
- Unions are concerned about bypassing their own process for advancement when they take on students for work experience.
- Concern exists regarding who is liable when a student or teacher gets hurt during a structured work experience.
- Age limits also pose a problem. For example, a student cannot use a tractor on the job because of age restrictions.
- Rural areas have limited number of businesses available to set up work experiences. Moreover, because of limited resources, these businesses are often not able to take the time to train students.
- Smaller schools require proportionally more students to be involved with other school activities, making it difficult to let students participate in structured work experience.
- School coordinators do not always have time available to supervise students regularly.
- Efforts need to be made to enroll female students in nontraditional courses.
- In some regions, students must provide their own transportation, which limits involvement.
- The amount of paperwork for employers can be a serious hindrance.
- Insurance, age limits, health regulations, and worker's compensation issues often hinder business involvement.

Involvement of Business, Industry, and Labor

The general perception is that business and industry are much more involved with professional technical education than ever before. More recently, the Workforce Quality Council has been instrumental in increasing business involvement.

In most cases, involvement consists of serving on an advisory committee. Some advisory committees provide information on what students should be learning. Others are directly involved with curriculum development (e.g., applied academics).

Employers are beginning to feel that schools will listen to them and take their advice. They also see the need to become involved for their own survival in the years ahead.

Specific examples of involvement include:

- Developing curriculum materials
- Providing job shadowing opportunities
- Providing classroom instruction (e.g., Junior Achievement)
- Serving on advisory committee for Workforce grants
- Working with disabled students (e.g., Wildlife Safari)
- Providing resources for equipment purchase (e.g., computer labs and software)
- Providing input to curriculum committees in conjunction with HB3565
- Providing input on community needs and validating student competencies

Many conditions exist which make the involvement of business, industry and labor difficult. The following are some examples:

- There has been a lack of understanding of each other. Some focus group participants believe that businesspeople and educators speak different languages. Many educators are reluctant to ask for help from business and industry. Part of this reluctance stems from a lack of understanding of the language of business.

- Teachers lack the time to contact and network with businesses.

- It is sometimes difficult to separate out businesses that provide only lip-service from those genuinely interested in placing students and working with educators.

- Many small businesses do not have the time and resources available to help out. There are not enough large companies to participate everywhere they are needed.

- The involvement of labor and industry is hampered by their inflexibility toward youth apprenticeship programs. They are too restrictive about participation in their programs. Also, labor is concerned about issues related to lay-offs.

- In some cases, having too many advisory committees is a barrier to involvement.

Regional Consortia

The regional consortia have been very positive and helpful. In general, the focus groups perceive the regional consortia as successful and active. In most cases, because of the

long history of agencies and people working together, it has been relatively easy for the consortia to build consensus.

There is a perception that the consortia have been instrumental in getting grants for professional technical education and in improving program articulation. In many cases, the consortia administer Carl Perkins funds and provide direction for professional technical programs at the high school level.

Many participants report that the major role of their consortia has been to review Carl Perkins grant applications and determine how to spend the grant money. They have not been involved in designing workforce training programs. In other cases, the regional consortia have helped with funds for teacher internships, curriculum revision, and staff development. New 2+2/Tech Prep programs have been started under the leadership of the consortia. In many regions, the consortia are coordinating and upgrading 2+2/Tech Prep programs. The consortia have eased turf problems by setting goals and priorities from a regional perspective.

Focus group participants identify several barriers:

- Because consortia members are volunteers, it is sometimes difficult for them to attend meetings and to serve on committees. Also, some members may not buy into the priorities.

- Communication is a challenge and can be a problem. Because communication usually goes to superintendents and principals, some staff people are not aware of all that is happening.

- Some participants view too many meetings and too many layers of bureaucracy as major problems.

- In some cases, consortia lack clear ideas about what they are working toward (e.g., HB3565, Workforce 2000, Carl Perkins, or *America 's Choice*).

Program Coordination

Coordination between high schools and community colleges is accomplished primarily through 2+2/Tech Prep programs. These provide opportunities for high school students to lay the foundation for on-time completion of community college programs. For example, students can earn community college credit in high school, saving time in community college to learn more advanced skills. In some instances, however, gaps exist, and the articulation is unclear. In at least one case, program coordination outside of high schools is practically nonexistent.

Most participants report improvement in coordination among high schools. Many indicate that teachers and administrators meet regularly and have a good idea of what each other is

doing. In some cases, teachers have worked together on regionwide curricula. In one region, a computer network is being set up to link the community college to regional high schools and the education service district. This will enable teachers to electronically track credits, classes, and mastery of competencies.

Little, if any, coordination exists between community colleges and four-year colleges. In one case, the community college meets twice a year with the four-year colleges to discuss curriculum changes.

Coordination with JTPA occurs mostly through informal mechanisms such as personal interactions.

According to the focus group participants, several obstacles stand in the way of effective coordination, including:

- At times, some squabbling takes place over fund allocation.
- Other barriers are a lack of communication among counseling staff, a lack of time for meetings, and a lack of articulation of what is being taught in different courses.
- Coordination is also hampered by prevalent attitudes among teachers who believe that success means a four-year college degree.
- Federal regulations, turf issues among school boards, and Measure 5 cutbacks are identified as barriers by some participants.
- Other participants point out a need for a common understanding about student outcomes.
- Community college staff seem reluctant to find out what is happening at the high school level, according to some participants.
- Some participants indicate a need for coordination with high schools and colleges in Idaho. Students in rural areas on the border should be able to use whatever is closer and cheaper to get an education.
- Apprenticeship programs have not worked well because of a lack of union involvement.

Exemplary Practices

Focus group participants identify a wide array of practices which they considered to be exemplary. The following are samples of such practices:

- Advanced placement classes provided by community colleges
- Work experience programs
- 2+2/Tech Prep programs
- Principles of Technology
- Health occupation programs
- Computer-aided drafting
- Career fair and shadow day
- The Expanding Horizons program for girls
- Teen Women in Science and Technology (TWIST)
- The corporate classroom developed by the SAIF project
- Junior Achievement
- Mentorship programs
- Automotive and manufacturing technology
- Applied Communication programs
- Apprenticeship programs
- Tech Prep/Associate Degree (TPAD) programs
- The Bridge program for at-risk students
- The basic integrated technology program for Hispanic students
- JTPA programs for Native Americans
- The integrated technology program for dislocated timber workers
- Business Education Compact (the clearinghouse program in Washington county)

SERVICE RECIPIENTS

A focus group of service recipients was conducted in each of the 18 regions in November and December 1992. A total of 136 individuals participated in the discussions. The participants included students; parents; representatives from business, industry and labor; Workforce Quality Council members; and community members. Each discussion lasted approximately 90 minutes.

Program Improvement

Service recipients identify several areas in which improvement in professional technical education has occurred:

- Additional and better materials are available due to increased funding.
- The addition of applied academics courses, particularly Principles of Technology, has been a great improvement.
- Student participation has risen because professional technical education classes have improved.
- Workforce programs are beginning to better meet the needs of the community.
- More equipment (especially computers) is now available in the schools. This has opened up such classes as graphics design and computer-assisted drafting that were not available before.
- A significant improvement is the development of structured work experience programs.
- Partnerships with business and industry have grown.

According to the focus group participants, program improvement is hampered by the following factors:

- The negative attitudes of school staff, students, and parents toward professional technical training are a serious barrier. Parents view workforce programs as less important than college prep programs. Students see professional technical education as an easy way to receive credits. School staff are generally not well-informed about job options and training programs for students. Counselors are still encouraging students to get into college preparation programs instead of professional technical courses.
- In most cases, high school programs are available only to upper class members (juniors and seniors), even though earlier involvement would be beneficial. For

example, applied academics are generally reserved for juniors and seniors. Students wish they had the opportunity to take these courses as freshman or sophomores.

- Rural areas face additional problems and issues. While urban areas can offer training for jobs in local industry and business, rural areas must look beyond their local areas. As one rural participant puts it: *"We don't have enough here to keep educating people and absorbing them in this area, so we need to look at what is going on in the metropolitan areas."*

Applied Academics

The integration of applied academics varies from region and region. In most regions, applied academics are incorporated in the professional technical curriculum to varying degrees. In most cases, high schools offer Principles of Technology and community colleges offer separate classes in Applied Mathematics, Applied Communication, and Principles of Technology. In some regions, applied academics have not been incorporated at the high school level.

According to focus group participants, receiving credits for applied academics is the exception rather than the rule. Generally, students do not receive college credits for applied academics incorporated in a technical course.

Most students feel that there should be more applied classes offered in high schools. In their view, applied classes are more interesting and "teach" more than the regular curriculum.

Barriers to the incorporation of applied academics in the curriculum include:

- Generally, school staff are not aware of the importance of applied academics. According to focus group participants, many counselors and teachers feel threatened by applied academics. Teachers are reluctant to change their teaching methods. It is difficult to get academic teachers to provide instruction in a work-related context. Teachers need training to overcome their reluctance to teach applied academics.

- Money is another problem. When school funding is cut, electives such as applied academics are deleted from the curriculum.

- In most cases, applied academics are not taught as separate courses and students do not receive college credits for learning applied academics.

- According to some students, applied academics courses are not publicized enough. In some cases, the only way to participate in an applied academics class is through teacher referral.

Structured Work Experience

Participants agreed that structured work experience related to career goals should be an integral part of professional technical education. The workplace is seen as a great classroom where students could put their knowledge to work.

Generally, structured work experience is irregular or non-existent at the high school level. Where work experience is available, it is generally provided with little or no supervision. Some high schools offer credit for supervised work experience. At the community college level, cooperative work experience is generally provided in a variety of programs.

Specific examples of structured work experience include:

- Mentorship programs in the health occupation
- Work experience programs with business and industry
- Job shadowing

Students report that work experience not only gives them valuable training but also changes their attitude. The positive interactions with adults make a difference in their lives. Some indicate that their employers are their best teachers. To the participating students, structured work experience is very valuable and needs to be expanded.

Focus group participants identify several barriers to providing structured work experience, including:

- The inflexibility of school schedules and credit requirements makes it difficult to receive work experience.
- Business and industry need incentives to provide work experience. *"They need to be able to receive something from it."*
- Students are being trained on obsolete equipment. Equipment used in business and industry is much more advanced than what the schools have.
- Age restrictions are a limiting factor. For example, students have to be 18 years old to operate some machines.
- Some employers feel that students have very poor attitudes and lack a work ethic.
- Lack of transportation for field trips is a problem.
- Students receive very little encouragement from teachers to participate in structured work experiences.

- Some students do not have time for structured work experiences because they are too busy earning credits for college.
- Some high schools offer structured work experience only during the senior year.
- Issues related to insurance and liabilities are major obstacles.
- Many students are not aware of offerings at their high schools.
- Small businesses do not have the time or resources to help provide structured work experience.

Involvement of Business, Industry, and Labor

The extent of involvement varies from region to region and, within a region, from school to school. Some focus groups report a high degree of participation; others indicate they see very little.

Many businesses are still reluctant to participate. In most cases, involvement comes from large companies. Smaller businesses are much less involved. Labor participation has been very limited.

Business and industry representatives often sit on advisory committees for professional technical education programs. They have identified student outcomes and designed curricula. Some businesses have donated equipment to schools. Field trips are a common link with business, industry and labor.

Some focus groups report that the Workforce Quality Council has assisted with planning curricula and setting program directions. However, in some cases, local businesses have found it difficult to take the time needed to make the council work more effectively.

Specific examples of involvement include:

- Sponsoring job shadowing for students
- Participating in job fairs
- Meeting with students to discuss the world of work
- Participating in curriculum development projects
- Developing apprenticeship programs

Many participants report that the involvement of business and industry, when it happens, has always been positive. It just needs to happen more.

According to focus group participants, the involvement of business, industry, and labor is hampered by the following obstacles:

- There is a general perception that business and education need to have a better understanding of each other to develop more partnerships.
- Students often learn specific technical skills that change quickly over time. Businesses are more concerned that students know how to work as a team and how to get along with people.
- It has been difficult to convince business and industry that they can benefit from their involvement with education.
- Business representatives are reluctant to sit in meetings and not come out with some concrete, productive results. They do not have a lot of time for planning and discussion.
- Availability of work sites is a serious barrier to providing work experience. This is particularly true in rural areas where most of the businesses are small.
- A lack of coordination between schools and businesses is another barrier. Many businesses have the ability to hire students but find it difficult to make connections with school programs.
- Business sees education as inflexible with its collective bargaining, contracts, and rigid schedules. Education is seen as too territorial and involved in self-preservation.
- Labor is seen as not wanting to be part of the educational reform movement. Apprenticeship programs are disappearing because labor does not seem willing to be a part of the process.
- Most businesses, especially the smaller ones, are not able to articulate what they really need from education.

Exemplary Practices

Participants in the focus groups have no difficulty naming exemplary practices in their respective regions. The following partial list illustrates the wide range of areas covered by such practices:

- Certified Nurse Assistant (CNA) programs
- Law enforcement programs
- Health occupations and the child care programs
- Technical centers/Skills centers
- Business/industry involvement

- Automotive classes
- Dislocated worker programs
- Manufacturing and engineering cooperative programs
- Summer internship programs for teachers
- The integrated technology program
- Job shadowing programs
- Student-based enterprise
- Job Corps
- 2+2/Tech Prep programs
- The Wildlife Safari program for special education students

INTERVIEWS WITH ADMINISTRATORS

In conjunction with the focus group meetings, individual interviews were conducted with 16 regional coordinators and 9 professional technical deans of community colleges (including a vice president). No interviews were conducted with regional coordinators and professional technical deans who participated in focus group discussions in their respective regions. The following is a summary of findings obtained from the individual interviews.

Program Improvement

The implementation of new programs has improved the quality of workforce education and training in many regions. Notable examples are 2+2/Tech Prep programs, technology programs (e.g., Integrated Technology, computer-assisted drafting), and applied academics (e.g., Principles of Technology).

Other examples of improvement include:

- Increased visibility of professional technical education
- Increased work experience for students
- In-service for vocational teachers and counselors
- Teacher internships
- Increased participation of business and industry
- The establishment of regional consortia
- The development of skill centers through Workforce 2000
- The development of new curricula (e.g., Tech Prep curriculum)
- Efforts to identify the needs of business and industry
- Increased coordination with business, industry, and other agencies such as JOBS and JTPA
- More positive attitudes of educators towards change
- Increased cooperation among key players in workforce education
- A more integrated approach to planning

According to the regional coordinators and community college deans, workforce grant money and increased awareness of school reform have facilitated improvement of workforce education and training. As one respondent puts it: *"Workforce funding really enabled us to do what we were attempting to do all along, work together and develop programs. It has helped us to do it a lot faster than we were able to before."*

The interviewees identify a number of barriers to workforce improvement:

- The full curricula already in place make it difficult to add professional technical education courses.

- Many teachers and counselors believe that they are preparing students for four-year colleges, not the workforce.
- Unions have been reluctant to be involved in professional technical education.
- In some cases, there has been a lack of administrative support and instructional leadership at the building level.
- Teachers lack uninterrupted time to develop curricula.
- Redundancy of effort results from the number of different committees in the community and the difficulty in keeping track of what is happening.
- In some cases, the sheer size of the region makes if difficult to coordinate workforce improvement activities.
- Financial cutbacks due to Measure 5 are a serious barrier to progress.
- Prescriptive funding sources (e.g., Carl Perkins) can be a hindrance. Local agencies have to look to state and local sources for funding to the fill the gaps.
- School districts need to understand the need for regional planning. It is difficult to break away from the management style of centralized decisionmaking at the district level.
- A lack of funding for teacher in-service can hinder curriculum improvement.
- Excessive paperwork and bureaucracy are hindrances to improvement.
- Funding uncertainties make it difficult for the regions to commit to all the programs they would like to implement.
- "Too many hoops" to jump through to receive funding. The state should give regions more control over what they do with the money they receive. As one respondent puts it: *".... with the hoops to jump through, business and industry are not as likely to help because it makes them feel like they aren't listened to."*
- Some distrust exists between the regions and the state when the latter sets up rules and makes money available on a competitive basis.
- Improvement has been difficult because of a lack of resources. As one respondent sees it, *"Workforce funding is just enough to scratch the surface to begin to make changes but not enough to make the global changes that are necessary."*
- There have been some *"turf battles over who gets what."*

Applied Academics

With Carl Perkins, Workforce 2000, and Tech Prep funding, there has been a significant increase in the integration of applied academics at high schools and community colleges. At the high school level, common applied academics courses involve teaching of math, communications, and physics (Principles of Technology). Many teachers teach applied academics at a general level, using work-related examples as part of their classroom instruction. In some cases, the courses (e.g., English in technical classes) are intended for students with lower level skills. In most instances, applied academics are offered as elective courses. Applied course work is now accepted as credit at most postsecondary institutions.

At the community college level, applied academic courses are generally offered as electives. The more common courses include applied academics in math, communication, biology, chemistry, physics, and economics. In some cases, Applied Mathematics and Applied Communication are part of the developmental education department.

Several factors impede the incorporation of applied academics, including:

- There is a lack of appropriate materials, especially for Hispanic students.
- Cost per student is a problem, particularly for rural schools with small student populations.
- Many school administrators and counselors view applied academics as not equal to academic courses. Also, parents still expect their children to go to a four-year college to be successful.
- Some administrators see applied academics as another add-on, rather than an essential component of the school curriculum.
- The school schedule is a barrier.
- There has been a lack of funding for program continuation. Funding is available for program development, but not for ongoing implementation.
- A lack of effective models hampers acceptance of applied academics. Teachers need to see that applied academics can work.
- At the community college level, many mathematics and English departments still believe that applied courses belong in the developmental education department.
- A major barrier is the time it takes for teachers to learn new instructional strategies to implement applied academics.

- A lack of money for equipment purchase and classroom conversion is another barrier.

- Getting applied academics courses accepted for credit by the universities is a problem.

- Time is needed to develop the curriculum. "Canned" programs are not always appropriate. Teacher-developed programs are better than canned programs, according to some respondents.

- Some professional technical teachers are "territorial" about the curricula they have developed in the past. They do not buy into the new programs.

Structured Work Experience

Overall, structured work experience is not a strong area in professional technical education. In many high schools, no structured work experience is offered. In some, mentorship programs organized by individual teachers are available. There is little or no supervision of work experience at the high school level. Where it exists, supervision is often provided by individual teachers. Rarely is there a work experience coordinator to provide the needed supervision.

As one respondent sees it: *"The reality is that half of our students are working, but not working in jobs related to their education, or to their school-to-work transition; the jobs are not related to anything that addresses students' career goals and objectives."*

Where structured work experience is available, it is offered in a variety of ways. In some high schools, job shadowing is part of the professional technical programs. Others provide cooperative work experience programs in which the student finds the job and receives credit. In some high schools, students work in the community and are monitored by a coordinator on a weekly basis. In other cases, there is little supervision by the school.

In one region, cooperative work experience is provided on a regional basis. The regional coordinator identifies work sites, develops plans, and supervises students.
One region uses grants money to implement work experience programs for special needs students. Students receive classroom instruction for part of the day and have work experience for the rest of the day.

Another region is in the process of setting up a compact with businesses that will provide work experience on a regional basis. The coordination will prevent businesses from being approached by individual schools in the region. The compact will also make work experience an essential part of the curriculum.

At the community college level, a variety of options exist. At some community colleges, work experience often depends on what the student can find. In some cases, cooperative

work experience is part of the program. Other community colleges offer structured work experience as part of their curricula. Students are required to work a set number of hours on the job. In some cases, this is offered as a practicum in which a monitor supervises the participating students. Some community colleges provide coop-work experience in which students receive job training and practice their technical skills at job sites. Training objectives are set by both teachers and employers who also evaluate students at the end of the program. Very few apprenticeship programs are offered.

According to the respondents, work experience is impeded by the following factors:

- Funding for a coordinator is a major barrier.
- Lack of transportation, especially in rural areas, is another obstacle.
- Issues relating to workers' compensation are a problem.
- Much time is needed on the part of secondary schools to make the connection with businesses. According to some respondents, the amount of communication needed to ensure good placements is overwhelming.
- There is a lack of appropriate work sites. This will be an even greater problem when high schools become more fully involved in providing work experience.
- Union restrictions reduces the availability of some work experiences. Apprenticeship programs are dominated by unions. Child labor laws must be respected.
- There needs to be more commitment from the business community to invest in the workforce. Students should not be used as cheap labor.
- Many agencies operate on their own and do not coordinate their programs. They face different requirements, some of which make it impossible for them to work together.
- There is a need for apprenticeship programs. This has to be worked out with the local unions.
- Resources should be provided to make more work experience available to teachers as well as students.
- In rural areas, there are limited numbers of businesses able to provide work experience.

Involvement of Business, Industry, and Labor

Business and industry are involved primarily through advisory committees. They provide input on program development (e.g., integrated technology curriculum) at high schools and community colleges. A primary role of business and industry has been to review the professional technical curriculum.

Some regions have enjoyed a long history of business involvement. In some cases, for example, businesses have played a key role in providing teacher internships. In other regions, business and industry have participated by looking at student outcomes, evaluating the curriculum, and reviewing TPAD programs.

In one region, business and industry are instrumental in setting directions for the computer-assisted drafting program. In another region, business and industry are involved in developing competency-based programs. They help decide what students should learn and be able to do at the end of a program.

Labor has been less involved than business and industry. As one respondent puts it, *"With labor, there is a lot of talk but not much action."*

There are several barriers to involving business, industry and labor in professional and technical education:

- Problems with time and scheduling of meetings are major barriers to involving businesses.
- Involving labor in apprenticeship programs has been the weakest link. Apprenticeship programs are heavily "controlled" by the unions which some respondents view as a reluctant participant.
- It takes a lot of planning and discussion to organize and implement programs. Typically, business and industry do not have the time to do it.
- Child labor laws, insurance and liability issues, and transportation are barriers.
- Teachers and school administrators are afraid of change.

Regional Consortia

The regional consortia typically consist of representatives from the school districts, schools, community college, and business and industry. The role of the regional consortia is to make policy and administrative decisions. They provide resources, support, and direction for professional technical programs. They work with advisory committees to review curricula and help develop new programs. They also disseminate information and work on building awareness in the community.

In many regions, the regional consortia work well because *"everyone is too small to do anything on their own."* The consortia are essential to the success of all professional technical programs. In other regions, the consortia are less active. One respondent describes his region's consortium as follows:

> *Our regional consortium has been marginal at best. At this point they act as more of an informational clearinghouse than a source of direction. They are willing to go along with a direction that is given to them rather than set their own course.*

According to the interviewees, the regional consortia face the following obstacles:

- It is difficult to make meetings valuable to all participants.
- There is a risk of over committing teachers to a great number of overlapping activities.
- Some consortia have had problems in keeping enough business people involved.
- Another problem has been consolidation issues facing some of the smaller school districts.
- In some regions, the major problem has been the large size of the region. In one case, a county wanted to pull away and form its own group.
- Having a regional consortium can cause a loss of identity at the local district level.
- Some districts feel they are starting to lose local control. They balk at having to look at the bigger picture.
- There is a risk of being too eager and not giving changes reasonable time to come to fruition.
- The consortia must avoid being too much top-down. Reform will work only if everyone buys in.
- Resources are too limited to pursue a growing set of priority goals.
- In some instances, the consortia have met with resistance. School people need to be convinced that there is a need for change.
- Not all affected staff receive the necessary information. Minutes of the consortia go to the principals who do not always share the information with school staff.

- In some regions, the biggest problem the consortia face is a lack of money and time. Meetings are expensive to conduct. Also, consortium members have to attend meetings on their own time.

Program Coordination

The regional consortia play a key role in maintaining program coordination. Coordination between high schools and community colleges is accomplished primarily through 2+2/T·-h Prep programs. Program coordination is also achieved through developing curricula and programs on a regional basis. In some cases, coordination is accomplished through articulation at monthly meetings. Only limited coordination exists between community colleges and four-year colleges. Coordination of the apprenticeship program has been difficult and frustrating. Some education service districts play a secondary role in program coordination. Others have been instrumental in forging consensus on critical issues.

In some regions, cooperative relationships among the community college and school districts have existed for a long time. In one region, for example, a professional technical interdistrict program allows students from any high school to attend a program in another school at no cost. Coordination among the high schools has been effective because people have taken the time to discuss curriculum issues. In another region, the Oregon Institute of Technology (OIT) works with high schools. There is also some articulation with Oregon State University (OSU)

According to some respondents, Carl Perkins requirements have facilitated coordination by making it necessary for agencies to work together to obtain funding.

Respondents identify several factors impeding program coordination:

- One barrier has been community colleges' reluctance to find out what the high schools offer.
- Time and scheduling of meetings are major barriers to coordination.
- Some teachers are reluctant to take a lot of release time for planning and coordination, fearing that the continuity in their classes will be disrupted.
- A lack of response from the Bureau of Labor has been a barrier to coordinating apprenticeship programs.
- Four-year colleges have been slow to recognize the importance of their involvement in professional technical education programs. They do not consistently participate in coordination efforts.
- In some cases, regional coordinators and community college deans are spread too thin with heavy workload.

- Attitudes can be a barrier to coordination. Until people understand the need for coordination, they may not want to participate.

- Some teachers are reluctant to get involved with the change process.

- The lack of resources is a barrier.

Exemplary Practices

Respondents identify a range of practices which they consider to be particularly effective. Examples include:

- The use of total quality management (TQM) to manage projects
- The Hospitality, Recreation and Tourism program
- The use of EdNet to facilitate planning and discussion
- Summer internships for students
- Structured work experience provided to youths with Carl Perkins, Workforce, JTPA, and local money
- A professional technical interdistrict program which expands vocational opportunities for students
- The development of Tech Prep/Associate Degree programs
- The Advanced Technology Center
- Vocational programs for disabled students
- The establishment of a center for community development which provides retraining and placement services.
- An automotive program with support from Toyota
- Career fairs/shadow days/farm expo
- A local farm apprenticeship program
- Expanding Horizons (nontraditional occupations for women)
- Oregon Business Week and the People and Resources Camp.
- Forestry and natural resources curriculum
- A child care program
- Adoption of the Associated General Contractors curriculum
- Integration of applied academics (e.g., Principles of Technology)
- The regional consortia
- A theater arts program
- Jobs Training Partnership Act programs
- The Alternative Youth Association program for school drop-outs
- Structured work experience programs
- Computer-assisted drafting, automotive and forestry programs
- A forestry program with a statewide network and a competency-based curriculum
- An integrated technology program (mechanics, graphics, and computing)
- A basic integrated technology program for students with low level language skills
- A teen-parent program
- Teacher in-service provided by business and industry

SUMMARY

Against the backdrop of HB3565 and the general educational reform movement, a time of transition and growth is occurring for professional technical education. There is an anticipation that education in general is on the brink of a major change.

While professional technical education is a very high priority, those interviewed express a widespread perception that not enough is being done. For example, many educators believe that the groundwork for professional technical education should begin at the elementary level. Waiting until high school is too late for many students.

Negative attitudes are among the major barriers to successful implementation of professional technical education programs. Most teachers think success means a four-year college degree. Schools are designed for college preparatory students. Professional technical education is often stigmatized. This "elitism" inhibits communication and collaboration, especially with higher education.

Parents have largely been left out of the picture. Most educators feel that parental involvement is vital in helping to instill appropriate work values in children.

Money is another key issue. Staff development and equipment upgrade, two essential components of the improvement process, take money. The legislature, business, and industry must be willing to make substantial investment in professional technical education.

There is a deep concern that the legislature will back off after starting the momentum for change. Continued support, both ideological and financial, must be provided for change to continue.

Program Improvement

In recent years, there has been increased awareness of the important role professional technical education must play in school reform and an increase in the development and implementation of new programs. Notable examples include 2+2/Tech Prep strategies as well as programs in hospitality, tourism, recreation, mechanical technology, integrated technology, and office systems. Acquisition of new equipment or facilities has also helped improve the overall quality of professional technical education.

Teacher internships, an increasingly common improvement effort, are an effective means of breaking down barriers between regular and professional technical education. They provide teachers with experience with the types of skills students will need to enter the world of work. They provide an impetus for teachers to change their instructional strategies and present their content area in a work-related context. Through their internships, teachers have become more familiar with the language of business and are more comfortable interacting and networking with business people.

Business and industry have increased their participation on advisory committees and in the development of new programs. The role of business and industry on these committees has changed from rubber-stamping proposals to active participation in identifying community needs, specifying student outcomes, and validating curricula.

At the same time, educators have improved communications, relationships, and partnerships with businesses and other agencies such as JOBS, JTPA and the Employment Division. Increased sharing of resources has taken place among high schools, community colleges, business and industry, and other agencies.

The special population students are receiving improved services through alternative programs. Many of these programs have strong components in career exploration and preparation, employability skills, applied academics, and work experience.

Many educators, students, and parents still have negative attitudes toward professional technical education. They still believe that success means a baccalaureate degree. Students in professional technical programs are often considered "unsuccessful," having failed to make it in regular school. Professional technical classes are seen as less rigorous and valuable than academic classes.

Academic teachers and school counselors generally lack information about professional technical programs, job options for students, and skills which students need to enter the workforce. Many teachers are still teaching in isolation from what is happening in the workforce. Counselors are still placing students in the college track, thinking that this is the only path to success. Lacking experience in the workforce outside of education, academic teachers and counselors need intensive training on how to teach and counsel in a work-related context.

The regular school schedule makes it difficult to provide work experience or to incorporate applied academics. Whether a student is placed in general or applied mathematics often depends on what is available for the "empty box" in the schedule. Other obstacles include required seat time for students, lack of credits toward graduation for work experience, and the mandated state curriculum which leaves little room for professional technical education.

Applied Academics

To varying degrees, high schools and community colleges are integrating applied academics into their professional technical curricula. When applied academics courses are offered, they are usually taught as electives. Principles of Technology, Applied Mathematics, and Applied Communication are most often included in the school curriculum.

Because of the fullness of the mandated curriculum, applied academics classes are usually offered as electives. When budget cuts occur, applied academics are among the first to be

eliminated from the curriculum. Dual certification needed by a professional technical teacher to teach two different content areas for credit is another barrier.

Applied academics have been well-received by professional technical teachers and students. However, academic teachers generally do not view applied academics as important as the regular curriculum. They feel threatened by applied academics. Lacking the knowledge and skills to present an academic subject in a work-related context, academic teachers are more secure in teaching the traditional way. They believe that they are teaching for the sake of education, not the workforce. Also, teachers who are ready to retire in a few years may not see a need to change.

Structured Work Experience

Structured work experience is highly valued by professional technical students. It is viewed as an integral part of any successful workforce training program. However, little structured work experience is provided to students at the high school level. When available, work experience tends to be loosely organized, mostly unsupervised, and generally contingent upon the student's ability to find a job which may or may not be related to his or her career goals. In many cases, work experience programs (e.g., job shadowing and mentorship programs) provide students with career exposure rather than actual work experience. Structure work experience programs at the community college level are better established and organized.

Typically, there is little advance preparation or planning because very few sites have a full-time coordinator to carry out these vital functions. There is a general lack of appropriate work sites, especially in the rural areas where transportation is a major problem.

Labor and industry are seen as reluctant to provide opportunities for structured work experience. As a result, few apprenticeship programs are available to students.

The school schedule is viewed as too inflexible to allow for quality work experience. Moreover, in most instances, participating students receive no credit toward graduation.

Involvement of Business, Industry, and Labor

Business and industry have been increasingly active participants in professional technical education. In most cases, they have increased their involvement on advisory committees where their role has changed from rubber stamping decision to identifying the needs of business and industry, assessing student outcomes, and validating curricula.

Many businesses have also increased their participation in programs offering job shadowing, mentorships, and work experiences. In some cases, education and business are beginning to help each other by sharing equipment, facilities, and staff.

Industry and labor are less involved than business. Apprenticeship programs are difficult to establish because of regulatory restrictions and protectionist attitudes.

Educators need to learn how to communicate effectively with business. There is a perception that few business people are really willing to devote the time necessary to help change education. As a result, educators are reluctant to reach out to business for help.

There is a lack of incentive for business and industry to get involved. Business leaders do not see benefits of their involvement in workforce training programs.

Rural areas have a limited number of businesses. There are too many advisory committees for businesses to work with.

Regional Consortia

The consortia have played a vital role in setting regional priorities, funding new programs, and helping local districts see the bigger picture of workforce training and economic development. In most regions, the consortia review grant applications, distribute funds, provide direction, and disseminate information. They are an administrative arm for workforce programs rather than the designer of programs. This latter task is generally delegated to subcommittees or advisory committees.

A few consortia are directly involved with planning, developing, and implementing workforce programs. Some, for example, work directly with high schools and coordinate the 2+2/Tech Prep and TPAD programs.

Problems related to scheduling meetings and making each meeting valuable for all participants have been a barrier. There has been a lack of communication and dissemination of information from top policymakers to school level staff who are affected by the policy changes. There also has been a tendency to commit teachers and consortium members to too many activities.

Program Coordination

High schools and community colleges are generally coordinated through the 2+2/Tech Prep programs. In many cases, the programs are coordinated through the regional consortia. There is little, if any, coordination between high schools and outside agencies which administer such programs as JTPA and JOBS. No mechanism is in place to promote such coordination. Because of the lack of involvement from labor and industry, coordination of apprenticeship programs has been difficult. Program coordination with four-year colleges is minimum. These institutions generally do not see their role as preparing students for the workforce.

A major barrier to program coordination is the lack of communication and articulation between institutions regarding the contents of courses and student outcomes. There is

general agreement that labor and higher education are not willing partners in the school reform movement.

Exemplary Practices

Focus group participants have no difficulty identifying a range of exemplary practices in their respective regions. These practices range from 2+2/Tech Prep programs to services provided to special populations.

SURVEY OF STAKEHOLDER GROUPS SYNTHESIS

INTRODUCTION

The purpose of the written surveys is to build a comprehensive database of stakeholder groups' perceptions on program processes and outcomes as they relate to the pertinent evaluation areas. The surveys were conducted with 16 community colleges and stratified random samples of 47 public high schools (using Workforce 200 regions as the stratification factor) and 30 private professional technical schools. Respondent groups consisted of school/program administrators, program staff, and students. The survey samples comprise:

- 199 high school teachers and counselors
- 107 community college teachers and counselors
- 51 high school administrators
- 35 community college administrators
- 487 high school students
- 157 community college students
- 21 private professional technical school teachers and counselors
- 13 private professional technical school administrators
- 69 private professional technical school students

This section presents a synthesis of the survey results for the following areas: involvement of stakeholder groups, program coordination, curriculum and instruction, special populations, professional development, and effective practices. Detailed survey results for each of the respondent groups are provided in the technical appendices.

SURVEY RESULTS

Involvement of Stakeholder Groups

According to educators in the survey (i.e., teachers, counselors and administrators), various stakeholder groups have substantial involvement with professional technical education. For example, more than one-third of the high school teachers, counselors and administrators provide favorable ratings on the extent of involvement from business, industry and the regional consortia. One-half or more of their community college counterparts provide similar ratings. There is less involvement from other stakeholder groups such as labor, community groups, public employees and the Private Industry Council. Most of the educators indicate that the involvement of stakeholder groups has been very beneficial to professional technical programs. Tables 17 and 18 and Figure 8 present a summary of the results.

As shown in Figure 9, less than one-half of students report that they have: (a) visited a business or job site, (b) seen business or industry people in the classroom to help teach a course, (c) participated in a career fair, or (d) had a business or industry person as a mentor or tutor.

Table 17
Percent of Respondents Providing Favorable Ratings on the Extent of Stakeholder Group Involvement

Respondent Group	Stakeholder Group RC	BU	IN	CG	LA	PE	PIC
High school teachers and counselors	38%	32%	25%	22%	18%	21%	15%
Community college teachers and counselors	36	64	61	29	2	29	21
High school administrators	50	43	35	28	22	29	13
Community college administrators	48	74	74	39	29	27	20

Legend for Tables 17 and 18
RC = Regional Consortia
BU = Business
IN = Industry
CG = Community Groups
LA = Labor
PE = Public Employees
PIC = Private Industry Council

Table 18
Percent of Respondents Providing Favorable Ratings on the Benefits of Stakeholder Group Involvement

Respondent Group	Stakeholder Group RC	BU	IN	CG	LA	PE	PIC
High school teachers and counselors	50%	36%	56%	56%	42%	42%	42%
Community college teachers and counselors	45	76	78	47	51	43	40
High school administrators	69	72	64	54	42	31	40
Community college administrators	59	88	91	41	44	36	25

Educators identify several factors which have lessened the value of the involvement of stakeholder groups:

- Lack of familiarity with professional technical education
- Involvement being short-term and limited
- Inconsistency in involvement
- Turf issues
- Attempts to exert undue influence
- Involvement being more political than educational

Figure 8
Percent of Respondents Providing Favorable Ratings on the Extent and Benefits of Business Involvement

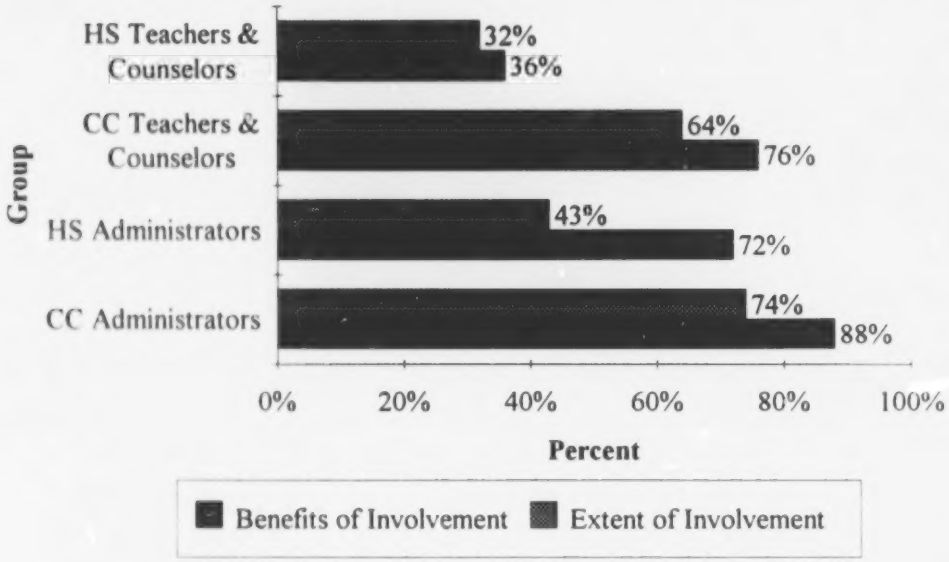
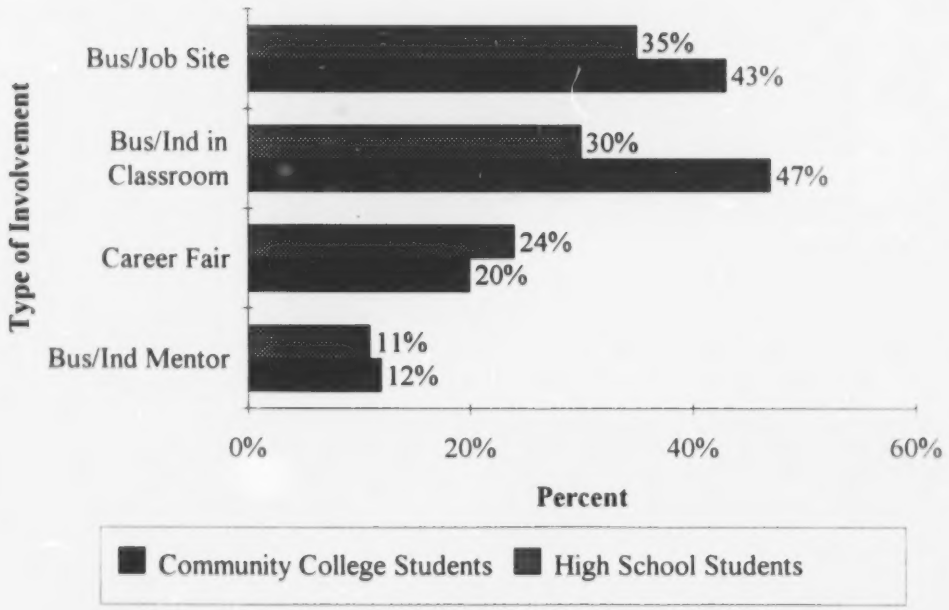


Figure 9
Percent of Students Reporting Involvement of Business and Industry



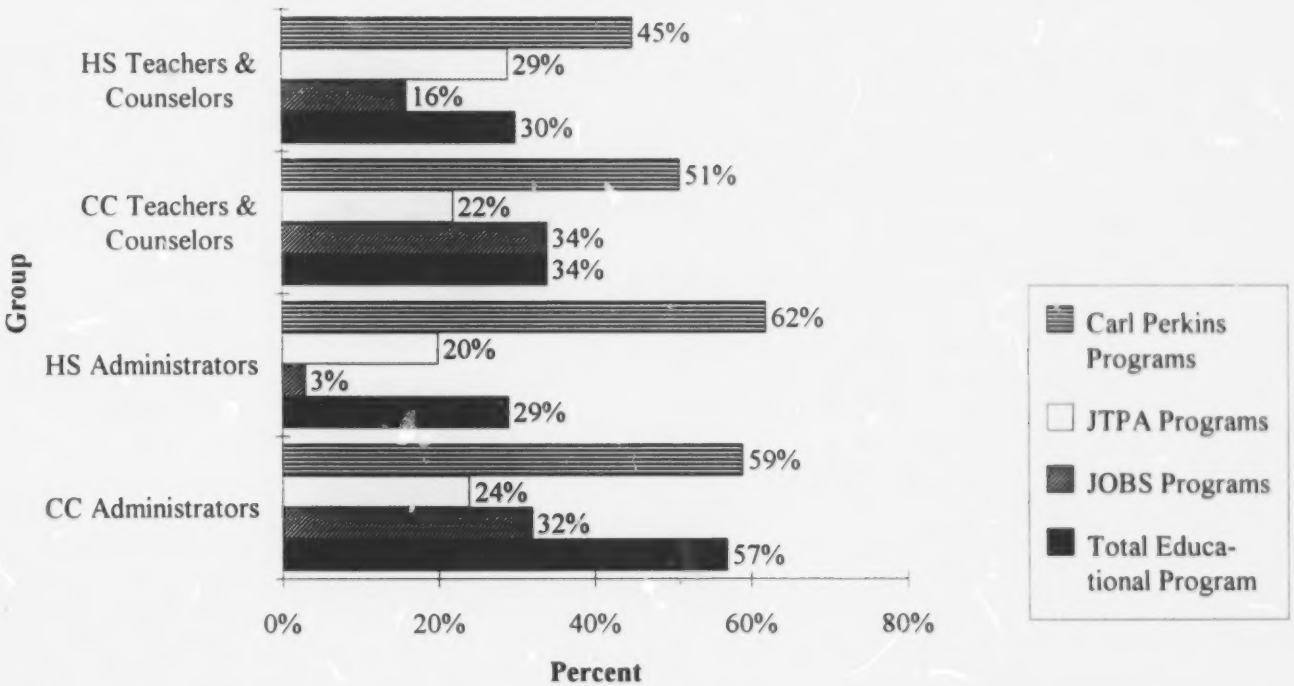
Program Coordination

Less than one-half of educators at the high school level and an even smaller proportion at the community college level provide favorable ratings on program coordination between high schools and community colleges. The linkage is established mostly through meetings between two faculties and joint curriculum development activities. Topics that are most often discussed at meetings include (a) 2+2/Tech Prep and TPAD programs, (b) program coordination, and (c) applied academics.

There is relatively little coordination with four-year colleges. Contact with private professional technical schools is virtually non-existent.

Most educators at both high schools and community colleges indicate that Workforce 2000 I and II programs are well coordinated with Carl Perkins programs. The coordination with JTPA, JOBS, and the overall education program is relatively weak. Figure 10 presents a summary of the results.

Figure 10
Percent of Respondents Providing Favorable Ratings on the Coordination Between Workforce 2000 I and II and Carl Perkins, JTPA, JOBS, and the Total Educational Program



Among the major barriers to effective program coordination are:

- Lack of time
- Lack of understanding of other agencies
- Divergent goals among the programs
- Turf issues

To improve program coordination, service providers suggest the following:

- Hire full-time program coordinators
- Allow more release time for coordination
- Provide for more planning time
- Restructure the agencies to pool their resources into fewer programs
- Eliminate duplicated services
- Create a consistent, timely, and common vehicle to disseminate information

Curriculum and Instruction

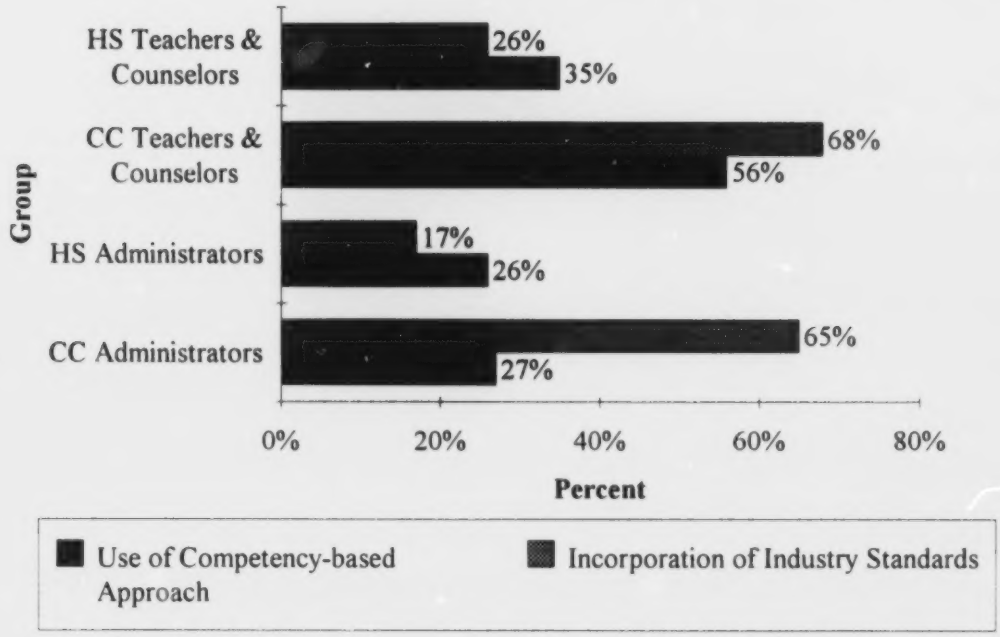
Less than one-third of educators at the high school level indicate that curriculum materials are developed on the basis of industry standards. About one-third say that a competency-based approach is used to provide instruction. Approximately one-half report that their schools provide applied academics as part of TPAD programs.

At the community college level, a large majority of educators indicate that curriculum materials are developed according to industry standards and that instruction is delivered in a competency-based approach. In addition, most report that their respective colleges provide applied academics courses as part of TPAD programs. Figure 11 provides a summary of these results.

Significant proportions of high school students in the survey are taking professional technical courses in a wide array of areas ranging from accounting to technology education.

Most high school and community college students have taken applied academics; the most common ones are Applied Mathematics, Applied Communication, and Applied Biology/Chemistry. See Table 19. Generally, applied academics courses are well received by the students. A predominant majority rate the course contents and the instructional methods very favorably as shown in Tables 20 and 21.

Figure 11
Percent of Respondents Providing Favorable Ratings on Curriculum and Instruction



Reasons students give for not taking applied academics courses include:

- Courses not offered at their high schools
- Lack of interest
- Will take courses later

According to these students, professional technical courses place a great deal of emphasis on mathematics, science, and writing skills. See Figure 12.

Most students report receiving career counseling at high schools and community colleges. In addition, a majority believe that taking professional technical courses will help them get a job in a related area as well as better prepare them for further education.

Only one-third of the community college students indicate that their high school program has prepared them well to take professional technical courses at the community college level. In their view, high school programs should provide more instructional time and place more emphasis on mathematics, science, writing, and critical thinking skills.

Table 19
Percent of Students Reporting Taking Applied Academics Courses

Course	Student Group: High School	Student Group: Community College
Applied Mathematics	60%	56%
Applied Biology/Chemistry	55*	
Applied Economics	23	
Applied Communication	18	36
Materials Science and Technology	13	
Principles of Technology	11	24
Chemistry in the Community	5	
Computer Literacy		50
Technical Writing		30
Mathematics for Technicians		28
Unified Technical Concepts/Physics for Technicians		14
Other		23

* Students taking regular biology or chemistry (instead of Applied Biology/Chemistry may have checked this item, resulting in an inflated percentage.

Table 20
Percent of Students Providing Favorable Ratings (Excellent or Good) on Content of Applied Academics Courses

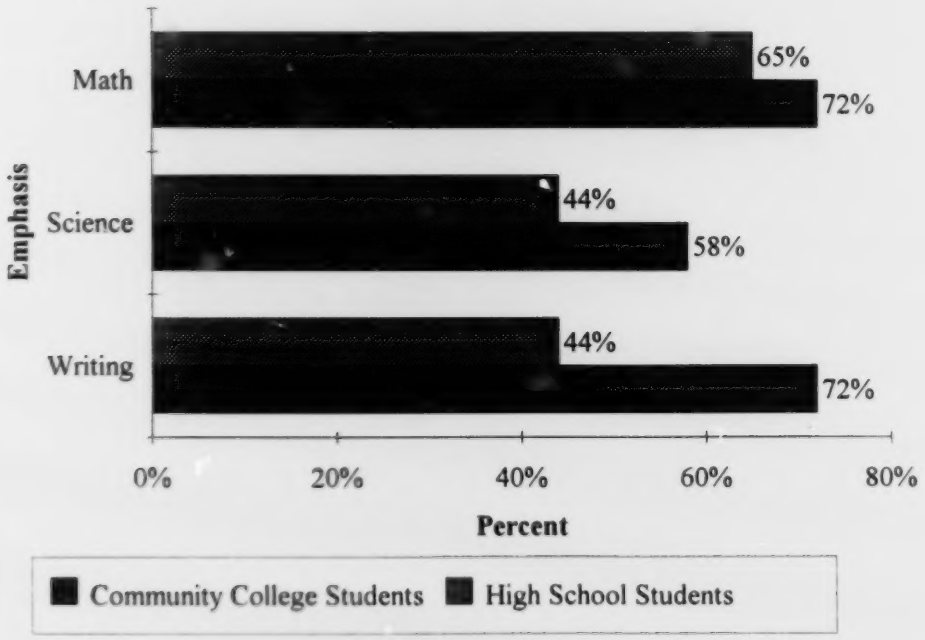
Course	Student Group: High School	Student Group: Community College
Applied Mathematics	73%	85%
Applied Biology/Chemistry	77*	
Applied Economics	69	
Applied Communication	79	85
Materials Science and Technology	64	
Principles of Technology	83	87
Chemistry in the Community	66	
Computer Literacy		85
Technical Writing		86
Mathematics for Technicians		90
Unified Technical Concepts/Physics for Technicians		74

Table 21
Percent of Students Providing Favorable Ratings (Excellent or Good) on Instructional Methods in Applied Academics Courses

Course	Student Group: High School	Student Group: Community College
Applied Mathematics	72%	78%
Applied Biology/Chemistry	75*	
Applied Economics	66	
Applied Communication	75	82
Materials Science and Technology	66	
Principles of Technology	79	86
Chemistry in the Community	69	
Computer Literacy		82
Technical Writing		76
Mathematics for Technicians		90
Unified Technical Concepts/Physics for Technicians		65

* Students taking regular biology or chemistry (instead of Applied Biology/Chemistry may have checked this item, resulting in an inflated percentage.

Figure 12
Percent of Students Reporting Various Skill Emphases in Professional Technical Courses



Students provide the following suggestions for improving professional technical education courses.

- Provide more instructional time
- Place more emphasis on computer skills, mathematics, and technical writing
- Reduce overlap and redundancy in course offerings
- Provide externship and apprenticeship programs

Structured Work Experience

Most educators indicate that their high schools or community colleges provide cooperative work experience and general work experience. There are very few internship and apprenticeship programs, especially at the high school level. See Table 22 and Figure 13.

However, at both the high school and community college levels, only a small proportion of students report participating in structured work experiences. Less than 5 percent participate in any internship or apprenticeship programs. See Table 23.

Most students who participate in structured work experience activities rate them very favorably.

Table 22
Percent of Respondents Reporting the Availability of Structured Work Experience Activities

	Activities						
Respondent Group	**CW**	**GW**	**CS**	**MT**	**EX**	**IN**	**AP**
High school teachers and counselors	68%	55%	34%	24%	19%	13%	13%
Community college teachers and counselors	84	42	10	22	13	23	28
High school administrators	75	59	43	29	29	14	20
Community college administrators	86	37	11	29	6	20	43

Legend
CW = cooperative work experience
GW = general work experience
CS = career shadowing
MT = mentorship
EX = exploratory
IN = internship
AP = apprenticeship*

* "Apprenticeship" is used in this report to include general work-based learning—not necessarily the participation in formal apprenticeship programs.

Figure 13
Percent of Respondents Reporting the Availability of Cooperative Work Experience and Internships

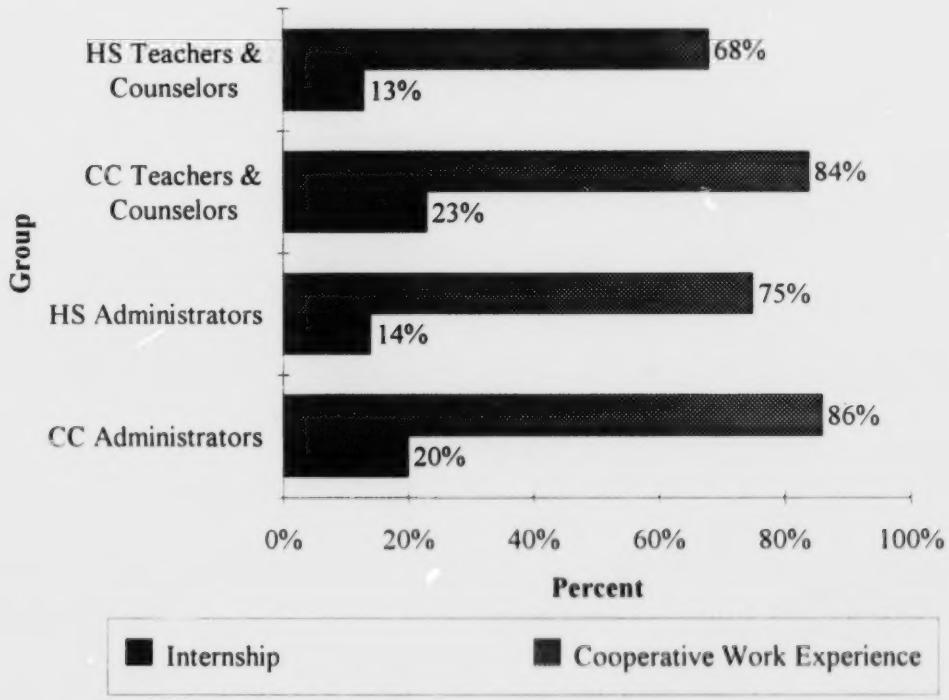


Table 23
Percent of Students Reporting Participation in Structured Work Experience Programs

Program	Student Group	
	High School	Community College
General work experience	18%	15%
Cooperative work experience	15	19
Career shadowing	11	
Mentorship	5	2
Apprenticeship	5	0
Exploratory	4	2
Internship	2	3
Other	5	13

Student Preparation

More than one-half of high school staff and administrators believe that their schools do a good job in preparing students for professional technical courses at the community college level. To better prepare students, they indicate that there should be more competency-based instruction and hands-on experience. In addition, there is a need to upgrade equipment at the high school level.

On the other hand, less than one-fifth of community college staff and administrators indicate that high school students are well prepared to take professional technical courses at community colleges. To improve things, community college staff and administrators express a near consensus that high schools should place increased emphasis on basic skills in mathematics, English, reading and writing.

Special Populations

More than one-third of high school staff and administrators report an increase in the enrollment of special populations (e.g., women in nontraditional occupations, disadvantaged and limited English proficient students) for the past two years. A smaller percentage report an increase in the use of support services by these populations. Their community college counterparts report an increase in both enrollment and the use of support services. Educators identify several reasons for the increase:

- Better support services such as making tutors available
- Better coordination with other agencies
- Better marketing of available services
- Better staff development in this area

Some major barriers remain, however. Examples include:

- Lack of encouragement from advisors
- Lack of resources, particularly in rural communities
- Traditional emphasis on college prep programs
- Lack of funding
- Negative attitudes

Professional Development

A large majority of educators, particularly those at the community college level, participated in professional development activities during the past school year. The bulk of these activities consists of participation in professional association meetings or conferences and seminar or workshops. Much less common are internships with business/industry and peer coaching/guided practice. The most intensive professional development activities (in terms of average hours of participation) are internships and seminars/workshops. See Table 24.

Professional development activities are generally well received. Most participants provide highly favorable ratings on their effectiveness, while noting the need for more internships with business and industry. See Table 25.

Table 24
Percent of Respondents Participating in Professional Development Activities

Respondent Group	Professional Development Activity				
	Meeting/ Conference	Seminar/ Workshop	Internship	Peer Coaching	Networking
High school teachers and counselors	79%	76%	18%	13%	26%
Community college teachers and counselors	85	87	14	12	35
High school administrators	82	84	8	4	31
Community college administrators	94	94	--	3	51

The full title for each professional development activity above is: professional association meetings or conferences; seminars/workshops; internship at a business or industry site; peer coaching/guided practice, special interest group networking.

Table 25
Percent of Respondents Reporting Favorable Ratings (Medium and High) on the Effectiveness of Professional Development Activities

Respondent Group	Professional Development Activity				
	Meeting/ Conference	Seminar/ Workshop	Internship	Peer Coaching	Networking
High school teachers and counselors	83%	79%	82%	75%	76%
Community college teachers and counselors	98	98	100	100	100
High school administrators	98	98	100	66	94
Community college administrators	97	93	--	67	95

The full title for each professional development activity above is: professional association meetings or conferences; seminars/workshops; internship at a business or industry site; peer coaching/guided practice, special interest group networking.

Exemplary Practices

A predominant majority of educators indicate that they find out about effective practices through professional conferences and reading. Some made the discovery during site visits to other programs. They share effective practices with others in the same ways (i.e., through professional conferences and site visits). See Tables 26 and 27. To better disseminate information on exemplary practices, educators suggest the following:

- Increase staff development activities (e. g., more workshops)
- Start a newsletter or an electronic bulletin board on outstanding programs
- Create and disseminate short video tapes on effective practices

Table 26
Percent of Respondents Reporting Various Methods of Finding Out About Effective Practices

	Method			
Respondent Group	Colleagues	Conference	Reading	Visiting Other Programs
High school teachers and counselors	99%	72%	63%	52%
Community college teachers and counselors	84	75	80	55
High school administrators	69	75	71	51
Community college administrators	89	80	77	69

Table 27
Percent of Respondents Reporting Various Methods of Sharing Effective Practices

	Method			
Respondent Group	Colleagues	Conference	Inviting Others to Visit	Writing Articles
High school teachers and counselors	87%	59%	37%	7%
Community college teachers and counselors	84	74	50	11
High school administrators	75	49	53	10
Community college administrators	86	69	54	11

Other Workforce Issues

Less than one-half of high school administrators are familiar with the economic development priorities in their respective regions. An even smaller percentage are familiar with the priorities for the state as a whole.

At the community college level, most administrators report that they are familiar with regional priorities. Less than one-half said they are familiar with state priorities.

A quarter or less of the administrators, at both high schools and community colleges, report that their region had developed plans to continue programs started under Workforce 2000 I and II.

A large majority of administrators said they are familiar with *America's Choice: high skills or low wages!*, a report of the Commission on the Skills of the American Workforce.

Suggestions for Improvement

Survey respondents provide a lengthy list of suggestions for improving professional technical education at the high school and community college levels. The more common ones include:

- Increase program coordination, including linkage with four-year colleges
- Provide more release time for planning and coordination
- Upgrade equipment and facilities
- Provide more staff development activities (e.g., staff training on applied academics)
- Improve business, industry and college partnerships
- Provide more instructional time for students, particularly at-risk students
- Increase the involvement of business, industry and labor
- Develop a better integration between academics and professional technical courses
- Develop competency-based programs for K-16
- Increase internship and apprenticeship programs
- Strengthen 2+2/Tech Prep and TPAD programs
- Improve the image of professional and technical education. People need to change the perception that professional technical education is the dumping ground for less able students and the belief that success means a four-year college degree

CASE STUDIES

INTRODUCTION

Four case studies were conducted to provide an in-depth portrayal of one or more exemplary practices in professional technical education in each of the following regions:

- Coos/Curry
- Douglas
- Umatilla/Morrow
- Portland Metropolitan

The regions were selected in close consultation with OPTE staff. Criteria for selection included (a) geographic spread, (b) program type, (c) implementation of exemplary practices, and (d) the region's willingness to participate in the study.

For each case study, the field researcher spent approximately four to five days onsite to interview a sample of key informants, review relevant documents, and observe professional technical education and workforce training programs in operation, including classroom observation, when appropriate.

Key informants included:

- Regional coordinators
- Deans of professional technical education at community colleges
- Students, instructors, counselors, and administrators at secondary schools and community colleges
- Representatives from business, industry and labor
- Job Training Partnership Act (JTPA) program staff and administrators
- Private Industry Council (PIC) staff and administrators
- Staff of the local economic development agency
- Representatives of the Chamber of Commerce
- Other training service providers

The number of key informants interviewed depended on the nature and scope of the exemplary practice the field researcher was investigating and the amount of information needed to gain a good understanding of the practice. Typically, 15 to 20 key informants participated in the interviews in each case study site. Each interview lasted approximately 60 minutes. In addition, the field researcher also met with other groups of stakeholders to gather relevant information.

Fieldwork was conducted in a highly flexible way to avoid being obtrusive or disruptive to the informants and their activities. The case studies were conducted in December 1992. The respective regional coordinators reviewed draft versions of the case study reports to ensure that all descriptions were accurate and that the findings were credible. Their input was incorporated in the final case study reports which follow.

The inclusion of the four regions in this part of the study in no way implies that exemplary practices are found only in these regions. As data in other parts of this study (e.g., focus groups) make abundantly clear, effective program practices are identified in all regions across the state. The four case studies merely provide a more detailed portrayal of a sample of such practices.

COOS/CURRY REGION

Shop has taken on a new name and face at North Bend Junior High. Not too long ago, mostly male shop students were involved in a traditional shop course, noisily hammering and sawing their way through various construction activities.

Now, all seventh graders spend one semester in Technology Education. They may still hammer and saw, but those tools are only one part of their program. Learning to use a computer mouse is also crucial to their success in class as it will be in the world of work. Using a MacDraft program, students in the computer center engage in designing a house, complete with shingles, chimney, windows, curtains, steps, doors, and picket fence. Or, they may use a zap shot camera to design a personalized Christmas card.

Resembling a more traditional shop, the production area is equipped with a band saw, drill press, disk sander, scroll saw, buffer, and router. Students build various projects after spending several days researching and designing the project at a production module.

North Bend's principal, reluctant at first to abandon the traditional shop course, has now become a convert. Of Technology Education, he says, *"It's the future, and the way middle and junior high schools should be moving."*

Background

The Coos/Curry region can be described as a mill, working-class community. It provides professional-technical education and workforce training to approximately 1,700 of the 4,000 secondary students within the region. Coos/Curry counties have a minority population of approximately 17 percent, and this population is fairly representative of students enrolled in professional technical programs.

Program Offerings

The primary areas of program emphasis are manufacturing, office occupations, health occupations, agriculture, forestry, diversified occupations for at-risk populations, and technology. The regional coordinator views the professional technical programs as a means for retaining students in the school system. The drop-out rate for North Bend High School is 3.5 percent which demonstrates the success of efforts to both retain students and to re-enroll them in the system.

Current enrollment at North Bend Junior High School is 520 students. Approximately 24 percent of the students benefit from the federal free or reduced lunch program. North Bend's mobility rate is 16 percent.

Program Coordination

Professional technical programs are coordinated by the South Coast Professional Technical Education Advisory Committee and the workforce quality committee. Membership on these committees comprises business representatives, key agencies, college personnel, and representatives from all high schools. Articulation between secondary programs and Southwestern Oregon Community College is facilitated by the regional coordinator who is on staff one day per week at the community college. He also serves on the South Coast Professional Technical Advisory Council.

In addition, he serves on the Advisory Committee for the Workforce 2000 Skill Center at the community college. The regional coordinator communicates frequently with the curriculum directors at the Coos and Curry education service districts.

Exemplary Practice

Technology Education at North Bend Junior High School is considered an exemplary program by the regional coordinator. He attributes its success to the interest of the two instructors that team-teach the course. They were instrumental in both the development and implementation of the program.

Both instructors feel the information they received while recently earning their master's degrees changed their philosophy about technology education. After reading an article on a technology program in Pittsburgh, Kansas, one of the instructors visited the program during the summer of 1991. He later attended a week-long workshop to obtain more specific information about the program. He then met in the fall with his colleague to discuss the philosophies of this innovation, and they agreed to team teach a course.

The beginning steps of the implementation process involved the determination of needs and the availability of resources for funding. The instructors received a commitment from the building administrator and the district superintendent to pursue their innovation. A presentation to the school board granted them permission to search for outside funding to begin development of the program.

An initial budget was created. A five-year implementation plan included the development of a communications computer lab and a limited series of modules that exposed students to a variety of technologies. The combined budget for both components was approximately $60,000. Both instructors then visited local industry and received a commitment of approximately $50,000 in donations from three sources. The contributors requested that the school district provide $10,000 in funds. The district agreed to provide the funds, and the resources were now available to begin development and implementation.

The 91-92 school year began the implementation of the new Technology Education course at North Bend. The facility was altered to provide for four areas--a computer lab, an area

for the modules to be set up, a production area, and a classroom. Much of the construction and renovation was completed by the instructors themselves.

While still teaching a traditional shop class, they ordered modules in flight, robotics, and electricity, and students were introduced initially to these modules on a selective basis. The computer lab was also established. The instructors continued to develop additional modules. Students returned from spring break to a more comprehensive program with additional modules: rocketry, engineering, computer numerical control, production, and technical information.

The one-semester Technology Education course is a required subject for all seventh grade students. Approximately forty students are assigned to each period. Currently, four periods each day are designated to accommodate all seventh grade students. Eighth grade students may select Technology Education as an elective. In a class of 40 students, half are assigned to the computer lab for a seven-day cycle; the remaining half, to a modular component.

Students in the computer lab receive instruction in computer literacy, computer-aided drafting, word processing, desktop publishing and visual communication. The learning is generally self-directed and project-oriented. One of the instructors is available to provide individual instruction and assist students as needed. Peer tutoring is also encouraged.

Students assigned to the modular component are grouped in pairs and assigned to one of the current modules. They spend their seven-day cycle in self-directed learning. Each module contains the necessary information, activities, and equipment to complete a unit of learning. Students begin day one with some initial orientation and complete a pretest. Days two through six involve students in watching videos, responding to research questions, and completing activities.

On day seven, students complete a posttest and culminating activity. Near the end of their 47-minute class period, they record their progress in their notebooks, clean their areas and move on to their next classes. Those who were working in the modular component now take computer lab; those who were working in the computer lab, now work on a modular component.

With each new class, the instructors provide a brief introduction to the day's activities and then students begin their study at either a module or at a computer station in the computer center. Students with special needs are tutored by a special education aide that follows the student throughout his or her day.

With each rotation, each student is assigned a new partner. This provides for increased communication and social skills development.

At the completion of the semester, students will have received instruction in rocketry, flight, photography, engineering, drafting, production, electricity, and robotics through

their rotation through the modular units. From their experiences in the computer lab, they will have experienced word processing, architectural design, data base and spreadsheet, computer-aided drafting, animation, sound imputing, and desktop publishing. Students are first introduced to basic computer skills; keyboarding, basic computer literacy, and word processing. This enables them to handle the more advanced computer skills required for subsequent activities.

Each module "stands alone." All materials and equipment are available at each center. The teachers' role becomes one of facilitator; challenging the more able students and providing remediation for those experiencing difficulty.

The entire facility is available for student use during students' free time. Students often visit the classroom before or after school and during lunch time to complete assignments and projects.

The program developers have strong commitments to Technology Education. They have changed the curriculum from traditional vocational emphases to a more technological approach. They developed several modules to pilot test the modular approach and a five-year plan to assure institutionalization of the Technology Education Program.

The regional coordinator credits these committed vocational instructors for the success of this exemplary program. Their initiative and dedication guided the progress. Several other school personnel have visited Delta, Colorado to observe a similar program. The regional coordinator arranged for other regions to visit the Technology Education Program at North Bend Junior High School. A brochure is currently being designed that will explain the program in detail. The coordinator is seeking additional grants to replicate the program in other schools and plans to provide inservice opportunities for other interested staff members.

Students speak positively about the program. They feel most students are successful because of the interest and motivation that the program encourages. Each module provides students with ample activities. There is always something to do, even when the required activities are completed. They use skills learned in other classes, like math, when completing activities in the modules. Students enjoy working at their own pace. They like working with a variety of partners.

Summary

Technology Education at North Bend Junior High School is a program that resulted because of the interest and commitment of two instructors and the strong administrative and community support it received. An observation of the program in operation leads one to believe that the program is meeting the needs of the students. A discussion with its developers reveals that they have plans to further develop the program. The success of this program has opened the door to further innovation in the areas of professional technical education and workforce training in the Coos/Curry region.

DOUGLAS REGION

School isn't what it used to be in Douglas County. Classes are rapidly incorporating world of work components to better prepare students who won't attend a four-year college after high school. Computer and other technology-related skills are not being taught as abstract skills with unfocused applications. Students receive hands-on experiences which connect the usefulness of what they are learning to real world job skills or further technical training.

Applied Communication is a course that teaches academic skills through real-life applications. It uses work-related activities, assignments, simulations and group work to teach the core academic skills of reading, writing, listening, speaking and problem solving. *"The class attracts students who are bored with or have failed traditional English,"* says a teacher who team teaches the course.

Twenty miles northwest of Roseburg, students at Glide High School are becoming computer-age entrepreneurs. They market products they make in wood shop in their community and use the profit to buy new equipment for a Manufacturing Technology course.

A company is formed, along with the election of a president and other officers, to oversee selection and production of a product. The class uses Auto CAD (computer-aided drafting) software to design their products. The design is computer-fed to a D&M 4 Milling machine, a smaller version of one used in local industry. After the machine produces the item, students use traditional wood sanding and finishing techniques to complete the process.

In this course, computer keyboarding skills are integrated with sophisticated software applications and newly developed computerized manufacturing equipment. Students finish the course able to compete for local wood manufacturing jobs or possessing vital knowledge and skills to further their technical training at a technical school or college.

Background

The Douglas region's economic base depended on timber and timber-related industry for decades. Practically all of the area's economic well being and stability rested on the various components of timber production. This has changed considerably in the last few years as timber harvesting and lumber production have decreased significantly. *"We have had over 3,000 displaced workers in this region which has had a devastating effect on the economy and their lives,"* says the JTPA director in Roseburg. Reduced timber harvests and several mill closures have increased unemployment to nearly 15 percent of the available workforce. These changes have had a traumatic effect on residents who are experiencing lay offs, unemployment, the need for job training, and the stress of doing different jobs.

Previously, working in timber or a timber-related industry represented security. Many high school students knew they could find high-paying jobs following graduation. With these jobs came a sense of security, a home, and a trusted lifestyle. This cultural norm has suddenly changed. Secondary and postsecondary education are much more highly valued than when timber industry jobs were a certainty. Now, more than ever, residents are realizing that education and training provide avenues to new jobs and security.

Program Offerings

The Douglas Education Service District (ESD) in Roseburg coordinates professional technical education services to the 14 high schools in the Douglas region. A majority of these high schools, however, are small and located in rural communities scattered throughout the county. The region's two larger high schools, Roseburg and South Umpqua, provide considerably more professional technical program offerings for students than do the small, rural schools. In fact, Roseburg High School has such well equipped professional technical education facilities that Umpqua Community College (UCC) teaches some of its night classes on its campus.

Although the Douglas region has begun expanding curriculum offerings for professional technical education, classes are not as well developed in all of the high schools, nor as available at as many grade levels, as regional educators envision them becoming. As the dean of UCC's Technology Program explains:

> *Program offerings really vary in the region because of the size of the schools. The smaller schools are usually limited to wood shop, agriculture, and business classes. Most of the smaller schools have business classes and computers. The larger schools provide a larger variety of classes such as welding, carpentry, automotive, wood shop, machine shop, electronics, and health occupations.*

However, professional technical education is not static in the small, rural schools. A consortium of nine rural high schools has organized and developed plans to coordinate resources which will enable these schools to expand existing course offerings. The Douglas ESD has submitted an integrated technology course of study for approval to the Oregon Department of Education. A proposed series of 14 high school courses will expand technology preparation in nine small, rural schools.

Most of the classes proposed for the new program cluster already exist and are being taught. Once the proposal is approved these classes will fold into the new integrated technology program cluster. All nine of the participating high schools plan to start as soon as the project is approved. Glide and Glendale high schools are somewhat ahead of the other high schools and are offering pilot courses this semester.

Glide High School's pilot class is Manufacturing Technology which integrates computer technology and application with marketing and wood shop skills. UCC will provide

college level courses leading to an Associate in Arts (AA) degree in Technology Preparation for those students wanting to go to community college. The regional coordinator for professional technical education expects their application to be approved with implementation following soon after. He expects the program to be in place and operational by the beginning of the fall term 1993.

UCC offers a comprehensive range of professional technical courses, which may lead to either an AA or Associate in Applied Science (AAS) degree. Students may choose from 28 professional technical program areas offered for the 1992-93 school year. UCC also provides career and employment counseling for students to assist them in deciding which program path to consider.

Numerous professional technical education classes are available through the region's 2+2/Tech Prep articulated arrangement between the high schools and UCC. Thirteen of the region's 14 high schools have secured articulated curriculum agreements with the community college which provide a total of 58 classes for high school students. Through this program, high school students are able to receive both high school and college credit for the same classes. The number of available classes ranges from one offered at Yoncalla High School to 14 offered at Roseburg High School. The classes are available in the following program areas: business, child care, electronics, automotive, and drafting.

The Umpqua Training and Employment Company contracts with JTPA to provide needed education and training for adults in the region. Of the over 3,000 displaced adult workers in the region, JTPA has placed 500 to 600 in educational or training programs which prepare them to obtain employment locally or in other areas around the state. Locating effective training for the participants is not a present concern. According to the company's director:

> *There are plenty of programs for displaced workers. The biggest problem is that the people are in an unemployment time crunch. Most of Umpqua Community College's programs are for two years. These people cannot take that long because their unemployment benefits terminate before then. The community college programs should be much shorter.*

At the end of October 1992, the Umpqua Training and Employment Company had 283 participants enrolled in 41 different short (13 weeks) and long (up to two-year) educational and training programs. Its director says that although he is unaware of any regional economic plan(s) driving the training for his participants, JTPA is quite successful in placing its students in gainful employment. Seventy-one percent have secured jobs at a minimum of $8.80 an hour after only 13 weeks of training.

Program Coordination

Considerable coordination exists among the many agencies, businesses, schools, and individuals involved in the professional technical education program. The Douglas ESD is

the agency responsible for coordinating the region's professional technical education endeavors. The professional technical education coordinator is the single point of contact for all participants involved in the many diverse elements of the region's efforts.

The regional coordinator manages and distributes professional technical education funds from different sources for local school needs. Carl Perkins federal funds are used to complement state of Oregon Workforce funds used to purchase classroom computer and milling machine equipment and software. Perkins funds are used to pay for professional development training. Last year the region received $31,000 from Perkins allocations for technical preparation curriculum and instructional development needs. These funds were allocated among nine rural high schools to pay for new staff development. Teachers needed to learn how to teach the new computer and milling machine software. Coordinating funds from different funding agencies to pay for necessary components of the same program greatly enhances that program's effectiveness.

The Douglas region's Workforce Quality Committee consists of 21 individuals representing business, industry, state and county public service agencies, labor organizations, JTPA service contractor, public schools, higher education, and a representative from the Oregon Department of Education. This committee provides direction from the private sector for implementation of professional technical education programs. At quarterly meetings, it evaluates regional program offerings, looks at what is being accomplished, and makes suggestions for changes. In talking of the committee, the regional coordinator points out, *"It is an excellent use of federal, state, and local tax monies because it brings so many elements together that otherwise might not have the opportunity to work with each other for a common purpose."*

The region's 2+2/Tech Prep program requires considerable program coordination between the local high schools and UCC. As an example, high school and community college instructional staff have cooperatively developed a list of competencies for each class that students must satisfy to receive college credit. They have developed a procedure designed to simplify the process of receiving community college credit for selected courses taken in high schools.

Clearly, Umpqua Training and Employment Company would be unable to offer the high level of training for the adults and displaced workers in the region without effective program coordination. UCC provides 90 percent of the training needs for the participants the JTPA contractor screens and approves. It is an equitable arrangement for all parties.

Exemplary Practice

The Toyota T-10 Automotive Training Program is notable for its curriculum and instruction, unique impact on students, and the new directions it is setting for the future of professional technical education in Douglas county.

UCC's Automotive Program began its relationship with Toyota five years ago. Toyota visited the college, looked at the automotive program and then asked the community college if it wanted to become a business partner in the T-10 Automotive Training Program. After a thorough discussion with Toyota representatives, the UCC's automotive program instructor, the dean of the Technology Program, and the President of UCC, all agreed to the joint venture. Toyota confirmed its commitment to the partnership by immediately sending a $10,000 check to the college for facilities improvement. Toyota has also sent UCC seven automobiles for students to work on as well as all necessary repair equipment and tools.

T-10 is a two-year program. After a student has completed one year of basic automotive training at UCC, he or she applies for admittance to the T-10 program for a second year of instruction. Acceptance into the program is based on a selection process involving Toyota, UCC, and a dealership willing to employ the trainee for a summer and fall work experience practicum. Employment at a dealership upon completion of the program is not guaranteed, but the Toyota, instructor and UCC have had excellent results in placing students. Recent experience confirms that employers hire graduates from the Toyota certified T-10 program.

In April of the first year of automotive training, the T-10 class instructor reviews prospective T-10 students for enrollment into the second year of the program. By the time a student is accepted into the program, Toyota and the instructor have secured a work experience placement with a participating Toyota Dealer. Toyota and UCC prefer to place students in Oregon dealerships. These arrangements are usually made before July 1. Students alternate between the participating dealership and UCC during their second year. They work at the dealership, for a respectable salary, until November 1 when they return to the college. While at the dealership the trainee receives instruction and experience in all areas of Toyota maintenance and mechanical repair.

On November 1, the trainees return to UCC and take Toyota-specific classes. All course material is developed by Toyota which includes a complete curriculum for each area of study. Lesson plans, videos, transparencies, and any other needed classroom materials are provided by Toyota. Toyota also gives each student a textbook. At the end of each course, students take two tests, one from UCC and one from Toyota. Passage of the UCC test to the instructor's satisfaction provides UCC credit toward an AA or AAS Degree. Seventy percent or higher is a passing grade on the Toyota test and leads to Master Certification with Toyota. Master Certification for mechanics is a major Toyota requirement.

Toyota compels all dealerships to provide training for its mechanics through 12 courses of certification. The average cost to the dealer is approximately $1500 per course plus lost production time for each mechanic. This can amount to over $18,00 for each individual, a considerable expense to be borne by the dealer. Students take all 12 courses at UCC. If they pass, it saves the dealer this expense. Obviously, this accomplishment is quite an attraction as it greatly enhances the students' job marketability.

Students receive other benefits as well. These include tuition scholarships, Snap-On tool sets that become the students' property upon successful completion of the program, hats, pens, notebooks, and Toyota textbooks. Furthermore, each student receives a Toyota jacket and the opportunity to participate in Toyota-sponsored events.

The four primary parties to this partnership are the students, the dealerships, Toyota, and UCC. All four benefit from their participation: students receive excellent mechanical training that may be used in any Toyota dealership, along with the high likelihood of future employment; dealerships, qualified, trained personnel which will save them future costs; Toyota, a dependable training program providing competent mechanics supporting their dealers and customer needs; and UCC, financial support and instructional materials from Toyota.
When asked what was required to make this program successful, the UCC instructor said:

> *Community Colleges need industry's support. The automotive program at UCC would not exist without Toyota's assistance. Toyota made it successful. Also, the industrial partner must be national. That factor alone helps so much with the job placement assistance, which is critical. That is what makes this program so different; Toyota helps place students in excellent positions following their training.*

Summary

Students from the ninth grade to adults in mid-career crisis in Douglas County have education or training available to meet their needs. Plans have been submitted to the State Department of Education to expand professional technical educational opportunity to students from small, rural schools. This availability extends to community college credit and could even lead to an AA or AAS Degree in Technology Preparation.

A respectable range of professional technical education programs are offered for high school students and adult learners. However, program offerings may vary considerably throughout the region. Many more programs and classes are available for urban than for rural populations. The small, rural school and community lack the educational resources of their urban counterparts. Lack of resources may even prevent small, rural school districts from bussing their students to urban areas. Steps have been taken to improve course offerings for the region's rural schools. Nine of the small, rural school districts, with Douglas ESD's assistance, have formed a consortium designed to expand the region's program offerings. The consortium recently submitted an application to the Oregon Department of Education to approve an Integrated Technology Program.

Adult professional technical education and training classes are centered primarily at UCC. Numerous program course offerings exist which JTPA officials say are meeting the training needs of the region's adults. The region's economic goal is to retrain displaced workers from the timber industry and other adults for alternative vocations or careers.

Program coordination within the region occurs through the guidance and efforts of Douglas ESD and the regional coordinator. Considerable cooperation exists among the many businesses, schools, and other agencies in the region. The Workforce Quality Committee takes an active role in assisting in program design and evaluation and in providing the direction for future endeavors. Business and industry are in leadership positions on the committee, both the chair and vice-chair work for local businesses.

New approaches to professional technical education are being tried. In these innovative programs, such as the T-10 Toyota program at UCC, students do well, teachers enjoy employing new approaches, and community and business leaders support what is being accomplished. The general consensus is that many new programs would not be successful without the additional funding from state, federal, and private sources.

UMATILLA/MORROW REGION

Usually, when you think of a group of students on a school bus, two thoughts immediately come to mind. The students are on their way to or from school, or they are one of the school teams, heading out for a game.

In the Umatilla/Morrow region there is another school bus that you don't see in most places. This is the bus that takes agricultural students from the local community college to do field work on neighboring ranches and farms. It's all part of the Agricultural Technology Program at Blue Mountain Community College (BMCC).

The program has its own 70-acre laboratory where students practice many of the lessons they learn or read about in class. The 70 acres is used in conjunction with other field work carried out with local ranchers and farmers. Local ranchers and farms often call the college when they need workers for one of their projects. All this provide vital hands-on experience for the students and builds mutually supportive relationships between local agriculture and the educational system.

Things look different in the classroom as well where the study and use of technology has also become critical. Computers and telecommunications have invaded the agricultural classes at Pendleton High School. The latest innovation is the Future Farmers of America (FFA) computer-based recordkeeping system that students regularly access for classroom activities.

Students also study elements of economics, international trade, and stock and commodities market transactions. In a unit called Commodity Challenge, students track an agricultural commodity for five weeks. Each student uses play money to purchase an amount of a commodity and follow its performance. Students develop a portfolio that illustrates what they have learned while playing the commodity market.

Another new program has brought state and regional attention to the Umatilla/Morrow region. Aquaculture, the science of farming and cultivating the waters is a new agricultural class. Harvesting the oceans and rivers will meet a growing need for efficient means of producing food. Pendleton High School is one of the first high schools in the region to teach this aspect of agriscience.

A fish incubator system is part of the curriculum. One tank holds White Nile Tilapia fish, the number one food fish raised in a cultured environment. Another tank contains trout which will be released into the Umatilla River under the auspices of the Oregon Department of Fish and Wildlife.

Background

The Umatilla/Morrow region's economic base depends on agriculture and agriculture-based industries. One of the primary agriculture related industries in the region is food

processing. Currently, 12 large plants provide employment to several thousand employees. Providing a competent, well trained workforce for these plants is both an educational and economic goal. Students and prospective employees know that job-specific training from area secondary schools or the community college provides them with an advantage in both the local and state-wide job markets.

Program Offerings

The Umatilla Education Service District (ESD) in Pendleton coordinates professional technical education among one community college and 13 high schools in Umatilla and Morrow counties with two large high schools, Hermiston and Pendleton, and 11 small, rural ones. The larger high schools have more resources to provide professional technical education programs than do the small, rural schools. They offer a wide range of classes in up to eight professional technical education program clusters in such areas as agriculture, metals, home economics, automotive, and graphic arts.

Programs in smaller schools primarily involve wood, metals, agriculture, business, home economics, and occasionally, automobile technology. However, if the smaller schools have the necessary resources, they may teach any class the larger ones do.

All 13 of the region's high schools and BMCC have formed a consortium. They are working together and writing curriculum for the professional technical education classes taught in the region. Although the distribution of class offerings is not even throughout the region, those classes that are taught share the same curriculum, regardless of where the teaching takes place.

The curricula are all written with the same format and include the Oregon Department of Education's Essential Learning Skills. Each unit also contains course goals, content specific competencies, a career guidance activities, a study guide and integrated instructional units in the following skill areas: applied communication, applied mathematics, and problem solving. Teachers have written 36 curriculum notebooks thus far that are either in final or draft stage. The regional coordinator explains the rationale guiding this type of curriculum management:

> *This is a long range project that we have committed 10 years to completing. Every high school in the region has the same curriculum. This makes it easier to articulate with BMCC. Every unit of instruction contains applied communication, applied mathematics, problem solving, and career guidance components. Area English and mathematics teachers wrote the applied communication and math parts of the 2+2/Tech Prep curriculum. We did this on the advice of our advisory committee.*

BMCC offers a comprehensive range of professional technical education courses leading to either Associate in Arts (AA) or Associate in Applied Science (AAS) degree. Students

may choose from 24 professional technical program areas offered for the 1992-93 school year.

Fifteen professional technical education classes are available through the region's 2+2/Tech Prep articulated arrangement between the area high schools and BMCC. Through 2+2/Tech Prep programs, high school students are able to receive both high school and community college credit for passing the same class. All the region's high schools have articulated curriculum agreements with the community college. Any high school may teach any of the 2+2/Tech Prep classes it chooses. Not all of the high schools teach all of the classes, because of differing personnel qualifications, available time, and facility restrictions.

BMCC also has agreements with area high schools for the high schools to teach professional technical education advanced placement classes. Students may receive both high school and college credit for these classes, as they may for 2+2/Tech Prep classes. The primary difference is that where the 2+2/Tech Prep classes are competency-driven, students in advanced placement classes must pass an examination to receive college credit. As soon as competencies are developed for the these classes, they will become 2+2/Tech Prep classes and the advanced placement program will be discontinued.

CAPECO is the firm which contracts with JTPA to provide needed adult education and training services in the region. Most of its training occurs at BMCC. Many trainees have earned their AA degree at Blue Mountain in the areas of nursing, dental assistant, or human services through this program.

CAPECO also has held a subcontract with Job Opportunities through Basic Skills (JOBS) to provide pre-employment training and to assist with job placement. JTPA training has been quite successful. For third quarter 1992, 201 of 284 program participants or 71 percent were successfully trained and qualified for local, better-paying jobs.

Program Coordination

A high level of coordination exists among the many agencies, businesses, schools, and individuals involved in the Umatilla/Morrow region's professional technical education program. Umatilla ESD is the agency responsible for coordinating the region's endeavors. The regional coordinator is the primary point of contact.

Two regional committees set the direction for professional technical education efforts. The first includes the area high school's vocational education directors, the JTPA representative, a local apprenticeship program representative, the regional coordinator, the associate dean of professional technical instruction at the community college, and the regional economist with the state of Oregon. This group reaches decisions by consensus and then sends their decisions to the Region 12 Workforce Quality Committee for approval. This is the second committee charged with the responsibility of setting regional

direction for workforce training. This gives business and industry significant influence on the region's areas of emphasis.

A survey of food processing and agriculture-related industries in the region was conducted recently in the region to identify critical training needs. "Communicating precise details" was identified as the number one need because (1) companies need to meet regulatory requirements (DEQ, EPA), (2) quality standards imposed by the outside (Japanese) require employees to "communicate precise detail," and (3) highly complex equipment in the food processing industry requires "precise detail" communication skills.

The high school and community college teachers realized that their students had to learn new skills to meet industry standards. They have infused these standards into existing professional technical education curriculum notebooks. To date, they have 492 units of instruction that all incorporate applied communicating skills. precisely. In addition, they have written six stand-alone "communicate precise detail" units of instruction for the agriculture industry.

Another example of excellent program coordination is the development of specific student competencies for each of the curricula. The course goals are the same for high school and college courses. High school and community college instructors pooled their skills and expertise to develop the curriculum. This occurred because of a high level of coordination among businesses, schools, agencies, and the community college. According to the dean of professional technical education at BMCC:

> *We have no turf battles, we are student-oriented and cooperate to do what's best for the student. We have a process which is easier for students to pass from instructor to instructor. The underlying theme is to ensure that competency accomplishment is authentic. It's worked very nicely.*

One of the most important coordination tasks the regional coordinator performs is that of creating and managing the budget for many of the region's programs. He is responsible for managing and coordinating federal Carl Perkins, Oregon Workforce 2000, and local funds. Coordinating these funds allows him to maximize their use for better program application. This is a distinct advantage because he knows which parts of the funds to use for equipment purchases and which are available for staff development. In fact, in many instances, funds are combined in projects to provide more equipment or staff training than any one allocation has available. This type of funding management provides a level of program coordination that otherwise would not be possible. All funding decisions are made by participants, but managed by the regional coordinator.

Exemplary Practice

Several programs are notable for their curriculum and instruction, unique impact on students, and new directions they have set for the future of professional technical education in the Umatilla/Morrow region. The Agriculture Technology Program at

BMCC and the agriculture classes taught at Pendleton High School described at the beginning of this section are excellent examples. Both private and public sector representatives identified the teaching of Programmable Logic Controller (PLC) operations as an exemplary practice within the region because of the unique impact it has on so many different members of the professional technical education community.

The PLC program provides classes for secondary school students to learn computer literacy and programming skills for the PLCs, highly complex computers which control industrial processes (e.g., packaging, production and distribution lines). They are used in all of the region's food processing plants and some timber mills. Local employers are having difficulty finding employees with computer literacy skills adequate to use the PLCs. The first step was to initiate staff development workshops to train nine regional high school teachers in PLC hardware and software applications. The regional coordinator and the Umatilla ESD coordinated the purchase of equipment needed for staff training and later use in the classroom. The Allen Bradley Company, which manufactures PLCs also helped train the teachers and provided the content specific curriculum for later classroom application. The teachers are scheduled for their final training and curriculum development workshop the first week of January 1993.

Local high schools will begin teaching the class in the second semester of the present school year. The schools are pleased to prepare students with skills being used in local industry, and local industry is pleased at the prospect of having a pool of trained employees available to work in their plants. The personnel manager for Lamb-Weston Company, a local potato processing plant, commented:

> *Use of the PLC training is a great help for our industry.... Students with these skills will have a leg up on other applicants. We can hire high school graduates in an entry-level position and move them through to higher positions in the company. We are willing to pay for them to take additional classes at BMCC.*

High school students are learning marketable skills that immediately make them very competitive for careers in the local food processing industry. High school teachers feel they are providing the local industry a valuable service. The local industry will, for the first time, have a pool of trained workers to meet their production needs.

The Allen Bradley Company, by providing training, is benefiting from the partnership with increased exposure and use of their equipment. The community college also plays an important role by providing advanced training for the workers hired by the food processing plants.

All in all, these agreements have led to a very successful business-industry and education partnership in which the business-industry sector is providing the leadership. The PLC Training Program may be the most innovative program in the region because it closely replicates work conducted in a local industry. It involves a new business partnership in

which previously unknown industrial computer operations are taught in public high schools. Industry and schools cooperate to fund industry-approved staff development, computer hardware, and student curriculum materials. It is clearly understood by all parties that industry sets the standards in course content, direction, and outcomes. However, industry then follows up by providing opportunities to high school graduates for local jobs with distinct career possibilities. The job and career potential is mutually beneficial to the student and the food processing industry.

Summary

The Umatilla/Morrow region provides a wide range of professional technical education program offerings for its high school and adult learning populations. However, these program offerings vary considerably throughout the region. Many more programs and classes are available for the Pendleton and Hermiston high schools than for rural populations. The small, rural school and community lack the resources of their larger counterparts.

Adult professional technical education and training classes are centered primarily at BMCC. Numerous program course offerings exist which JTPA officials say are meeting the training needs of the region's adults. Part of the region's economic goal is to train adults for careers in agriculture or agriculture-related industries such as food processing. At present, from the JTPA's perspective, this goal is being met for over 70 percent of their participants.

A high level of coordination and cooperation exists among the many businesses, schools, and other agencies involved in the region's professional technical education program. One excellent example of efficient program coordination among different private and public stakeholders is the development of the region's 2+2/Tech Prep program. One Pendleton High School teacher described it as follows:

> *We drew in business people to develop skills employers need. We coordinated junior high, high school and community college outcomes. We sat down as community college and public school staff and developed goals and objectives equally, everybody had the same say.*

The position of regional coordinator is crucial. That individual must have a good understanding of how the business/industrial sector works. As one business representative explained: *"You need a coordinator who understands the private sector and respects their methods of operations. He must minimize unnecessary hoop jumping and eliminate unproductive meetings."*

Many local leaders feel that their improvement efforts would not have occurred without the additional funding from state, federal and private sources. The regional coordinator summed it up by saying, *"We simply couldn't have done it without the Perkins and Workforce allocations."*

PORTLAND METROPOLITAN REGION

Thinking about a career as an 11th or 12th grader may not be a high priority for some students, but it was for Bert, who is currently enrolled in a professional technical program at Portland Community College (PCC). While attending Benson High School in Portland, Bert earned 12 community college credits and saved hundreds of dollars as a result.

He earned credits through the 2+2/Tech Prep program developed by the Portland Area Vocational Technical Education Consortium (PAVTEC). Linking the last two years of high school with community college, the 2+2/Tech Prep program articulates or matches courses and programs between secondary and postsecondary institutions. Bert says that this program made his transition to PCC easier. *"I get to skip the courses here that cover the things I learned in high school, which shortens the time I'll be at the college. I'll be able to go to work sooner, and I'll save a lot of money."*

Cindy also was a "PAVTEC student." Because of an agreement between Glencoe High School and PCC, Cindy earned eight community college credits when she completed the office systems program at high school graduation four years ago. Cindy's business education teacher set up an appointment for Cindy to meet the 2+2/Tech Prep coordinator and PCC's business technology instructor.

After graduation, Cindy enrolled in PCC's business technology program at the Rock Creek campus. According to the 2+2/Tech Prep coordinator, Cindy already had very good writing, speaking and math skills and had some technical skills from the high school program. *"These skills were really upgraded at the community college,"* she says.

In addition, Cindy participated in a cooperative work experience placement as a support staff employee in an area business. According to program coordinator:

> *After completing her associate degree, this company created a new job opening for Cindy as she worked into a full time position. Cindy called me last year saying she had moved into a job with another company and wanted to assist (her previous employer) in finding a replacement worker. Her boss said she wanted a person with an associate degree just like Cindy's!*

Bert and Cindy's stories are similar to hundreds of other students who have participated in PAVTEC's 2+2/Tech Prep articulation program.

Background

The PAVTEC and PCC regions are similar in scope, approximately 1,500 square-miles serving 850,000 residents and reaching as far north as St. Helens, as far west as Forest Grove and Banks, as far south as Newberg and Lake Oswego, and east nearly to Interstate 205. Each year this region graduates approximately 7,000 high school students from the

12 school districts in the region. These districts, along with PCC and the private sector representatives, comprise the PAVTEC consortium. The school districts include Banks, Portland, Beaverton, St. Helens, Forest Grove, Scappoose, Gaston, Sherwood, Hillsboro, Tigard/Tualatin, Lake Oswego, and Vernonia.

Program Offerings

PAVTEC presents an array of the services to high school and community college students and educators as well as to members of the private sector and the community. Its projects, funded through Carl Perkins Applied Technology Education Act funds, the first distribution of state Workforce 2000 funds, and local contributions, demonstrate how federal, state and local dollars can work together effectively to achieve maximum benefits. Examples of PAVTEC activities and services in 1991-92 include:

- Some 589 students articulated almost 4,000 community college credits while in high school and saved over $106,000 in community college credit dollars.
- 167 articulation agreements between area high school and PCC were created, upgraded, and serviced.
- Through a spring transition fair, special population students visited the community college and became familiar with professional technical programs and admission procedures.
- PAVTEC contracted with the Business Education Compact of Washington County in providing 110 assistantships in 1992 for teachers to be placed in summer workplace experiences for 3-8 weeks.
- PAVTEC currently has more than 2,000 sites providing structured work experience to students and plans to increase the number of work sites by contracting with The Future Workers of Oregon (FWO) through the Business Education Compact of Washington County.

What may set PAVTEC apart from other state's professional technical consortia is its outstanding commitment to serve students with special needs. The Special Populations Committee is an advocacy group for special populations to insure that they have access to professional technical programs, and once they are enrolled, to provide support services to insure their successful completion of these high school and community college courses. Special populations students include those who are disabled, academically or economically disadvantaged, limited English proficient, or involved in programs to eliminate sex bias.

In the past five years the members of this committee have made many strides toward achieving their goals. Accomplishments include: the Spring Transition Fair, a Quick Reference Guide, numerous staff development activities, the purchase of a Talent Assessment Program, teaching styles and learning styles workshops, and the hiring of

aides and tutors to assist in vocational classrooms. Portland Public Schools and PCC have designated a proportional amount of their Carl Perkins funding to hire adult aides and college student tutors who assist in targeted program areas.

At PCC, technical learning instructors have been hired to assist college students in targeted programs. They assess student needs and design and provide tutoring services to insure student success. They have established programs to recruit and retain woman and minorities in nontraditional occupations. One such activity is the Women in Engineering Support Group that meets on a regular basis to address issues and concerns of women in this nontraditional occupation.

Program Coordination

Program coordination is conducted by the Office of Professional Technical Education at PCC and a council of representatives. Each of the 12 participating school districts designate one or more council representatives as does the four PCC campuses. In addition, members of PAVTEC's Special Populations Committee participate as consortium members. The management team of the consortium includes the college's dean of professional technical education, who is also the executive director of PAVTEC, and the two regional coordinators. Other active members of the consortium are 13 organizations representing private business, industry and labor as well as higher education, and state and regional education sectors.

According to PAVTEC's executive director, *"The strength of the organization is its people. The Representative Council and committee members are empowered to make decisions and carry out plans. The consortium works so well because they make it work"*

While general day-to-day operations of programs and services are guided by PCC through the Office of Professional technical Education, program planning and development as well as regional networking occur at the monthly PAVTEC consortium and committee meetings.

In addition, annual strategic planning meetings are held in the spring to provide opportunities to generate ideas for program expansion and improvement. Representatives from participating high schools, the community college, and the private sector spend two days reviewing the year's professional technical education activities, assessing future regional needs and directions, and determining areas and methods to best address these needs.

For example, the May, 1992 strategic planning meeting identified the following areas of future focus for PAVTEC: coordination and administration of the PAVTEC region; guidance, counseling, and advising; business, industry, labor and community involvement; marketing and communication; instructional planning and development; and assessment.

Within PAVTEC, information is disseminated and ideas are exchanged at formal meetings and planning sessions such as the annual president's/superintendents breakfasts; principals/deans breakfasts; consortium meetings; steering, management, and PAVTEC committee meetings; and program articulation agreement update meetings held once each year. A PAVTEC newsletter, published quarterly, highlights recent regional activities, and a monthly "Calendar of Events" is distributed to area administrators and professional technical teachers to enhance coordination efforts.

The regional coordinator for the Washington and eastern Columbia counties sees the consortium as a:

> *....clearinghouse and forum for idea sharing, a catalyst for action where synergism occurs among the participating members. The fact that people from school districts, the community college, and the private sector have been meeting regularly for seven to eight years is quite unique and beneficial.*

Exemplary Practice

PAVTEC received the U.S. Department of Education Award for Excellence in Education and the 1991-92 Parnell Tech Prep/Associate Degree Partnership Award from the American Association of Community and Junior Colleges for the quality of its long-term, comprehensive 2+2/Tech Prep articulation program.

The success of the 2+2/Tech Prep articulation program is achieved through a broad number of articulation agreements developed between a high school and the community college; a network of high school building coordinators and community college representatives; and the 2+2/Tech Prep guides being distributed by individual districts. A breakdown of the number of students earning community college credit in the PAVTEC school districts for 1991-92 is presented in Table 28. Table 29 provides a summary of credit awards since 1986.

The program produces benefits on several levels by:

- Reducing duplication of coursework and learning, which equates into a savings of time and taxpayer money
- Motivating students to complete high school and further their education and job training
- Providing teachers with more personal satisfaction in part because it opens avenues for greater student success in their programs
- Upgrading the quality of programs as high school and community college instructors and administrators break the mold of their traditional isolation by meeting regularly to discuss programs, lessons, and educational reform

Table 28
Students Receiving Credit Through PAVTEC 2+2/Tech Prep Articulated Agreements for 1991-92

School District or Agency	Number of Students
School Districts	
Banks	11
Beaverton	68
Forest Grove	27
Hillsboro	73
Portland	242
Scappoose	24
Sherwood	23
St. Helens	10
Tigard	8
Vernonia	2
Other Agencies	
Bureau of Indian Affairs	55
Federal Corrections Institution	18
Newberg High School	1
Sabin Occupational Skills Center	12
The Dalles High School	4

Table 29
PAVTEC Articulation Credit Awards Summary

Area	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92
Districts	9	10	12	13	14	15
High schools/sites	12	20	24	25	26	29
Programs	6	7	15	18	11	20
Courses			45	66	49	77
Students	81	147	315	360	429	589
Grades issued	131	262	758	897	968	1,431
Credits earned	315	783	2,580	2,876	3,069	3,949
Credit value (PCC)	$7,402	$18,401	$60,630	$71,900	$82,863	$106,623

The TPAD is the next step beyond 2+2/Tech Prep articulation. TPAD broadens the opportunity for all students to continue their education and training. The TPAD concept moves toward the development of a comprehensive curriculum that is outcome-based and provides students the flexibility of program/career choices. The Tech Prep approach enables a large number of "neglected majority" students to receive relevant training leading to further education and meaningful employment. TPAD was first introduced with the 1990 book, *Tech Prep Associate Degree: A Win/Win Experience*, edited by Dan Hull and Dale Parnell.

What makes PAVTEC's TPAD program development unique? For one, it is well rooted in a strong 2+2/Tech Prep program, with eight years of success. Secondly, the people involved are deeply committed to improving the educational process. The PAVTEC TPAD coordinator says: *"All high school students are involved in TPAD. Articulation is one entry area into this program. Students will be in good hands because we have an enthusiastic, dedicated group of TPAD teachers."*

Five proposals have been submitted to the PAVTEC office for two-year funding to develop replicable model TPAD programs. Money for Phase I of this project, up to $75,000, will be allocated among five regional teams. Phase II implementation would begin in September 1993, if funds are available.

The model TPAD project will incorporate an outcome-based educational system that:

- Responds to the requirements of Oregon's 21st Century Schools Bill and the SCANS (Secretary's Commission on Achieving Necessary Skills) competencies.
- Integrates professional technical and academic areas and uses applied academics (e.g., applied math, Principles of Technology, applied biology/chemistry).
- Addresses the needs of community based groups in the sectors of business, industry, labor, government, social services, and families.
- Is designed for all students and has provisions to recruit special populations and provide special assistance in situations where needed.
- Disseminates to students and parents information about the pathways to the associate degree.
- Provides advising services and a seamless transition into programs at the community college and entry level employment.

Summary

Programs and services provided by PAVTEC are exemplary and can only expand and flourish in the future. Eight years of articulation and other PAVTEC services provide an excellent background for the current emphasis on TPAD development.

Consortium members strongly express the need for continued resources to accomplish the goals set forth by PAVTEC members. These goals include program maintenance and improvement and further expansion in areas such as staff development and training, integration of professional technical/academic curriculum, special populations, and partnerships among schools, the college, business, industry, labor, and community based groups.

How is PAVTEC assisting with the integration of workforce training into the total educational effort? Its successful 2+2/Tech Prep projects, TPAD program development, and emphasis on serving special populations all further this goal. PAVTEC gives priority to Oregon's regional and state economic goal to produce the best workforce in the nation by the year 2000 and equal to the best in the world by 2010.

CROSS CASE ANALYSIS

While the four case studies cover a diversity of content areas, program types, and geographic locales, they illustrate the existence of several common themes cutting across the exemplary practices. Among these are:

- Local leadership
- Private sector involvement
- Use of technology
- Competency-based curriculum and instruction
- Program coordination
- Staff development
- Long-range strategic planning
- Resource support

Each of these themes is discussed below.

Local Leadership

In each of the four cases, local leaders, the regional coordinator in particular, have taken a very active role in the development and implementation of the exemplary practice. In the Umatilla/Morrow region, for example, the high school professional technical directors and the regional coordinator have played pivotal roles in the Programmable Logic Controller (PLC) program. In the Coos/Curry region, the commitment and support from the building administrator and the district superintendent were essential to the success of the Technology Education program at North Bend Junior High and the regional coordinator's effort to seek additional grants to replicate the program in other schools.

In the Douglas region, the Workforce Quality Committee takes an active role in assisting in program design and evaluation and in providing the direction for future endeavors. The regional coordinator is the single point of contact for all stakeholder groups in professional technical education. In the case of PAVTEC, the strength of the consortium rests with the Representative Council and committee members who are empowered to make decisions and carry out plans. Program planning and development as well as regional networking occur at the monthly consortium and committee meetings.

Private Sector Involvement

None of the exemplary practices would have been developed without the involvement of the private sector. The most notable example is perhaps the T-10 automotive program in Douglas County. Acceptance into the program is based on a selection process involving Toyota, the community college, and a dealership willing to employ the trainee for a summer and fall work experience practicum. In addition, all course material is developed by Toyota which also provides lesson plans, videos, transparencies, and any other needed classroom material

In the Coos/Curry region, the technology program received substantial financial support from local industry to get the program off the ground. In the Umatilla/Morrow region, private industry and business have the important role of assessing the validity of program content. The Allen Bradley Company, which manufactures the PLC, is training teachers and providing curriculum materials for use in the classroom. In this region, it is understood that industry sets the standards in course content, direction, and outcomes. In the case of PAVTEC, active members of the consortium include representatives from private business, industry and labor. They meet regularly to generate ideas for program expansion and improvement.

Use of Technology

An emphasis on technology use is apparent in the case studies. For example, in the Coos/Curry region, the program developers have a strong commitment to technology education. They have changed the professional technical curriculum from traditional vocational emphases to a more technological approach. Students in the computer lab receive instruction in computer literacy, computer-assisted drafting, word processing, desktop publishing, and visual communication. In Douglas County, students are becoming computer-age entrepreneurs, marketing products they make in wood shop and using the profit to buy new equipment for a manufacturing technology course. In the Umatilla/Morrow region, computers and telecommunications have invaded the agricultural classes. The latest innovation is a computer-based recordkeeping system that students regularly access for classroom activities.

Competency-based Curriculum and Instruction

Another conspicuous trend in the case studies is the implementation of competency-based curriculum and instruction. In the Umatilla/Morrow region, all 2+2/Tech Prep classes use a competency-based approach. In fact, the region is developing competencies for its advanced placement classes. Once the competencies are developed for these classes, they will be become 2+2/Tech Prep classes and the advanced placement program will be discontinued.

In the Douglas region, computer and other technology-related skills are not taught as abstract skills. Instead, students receive hands-on experiences which connect the usefulness of what they learn to real world competencies. In the PAVTEC region, efforts are being made to develop outcome-based TPAD programs which address the SCANS competencies and integrate applied academics.

Program Coordination

The exemplary practices are supported and nurtured by effective program coordination. For example, in the Coos/Curry region, professional technical programs are coordinated by an advisory committee and the workforce quality committee. Articulation between

secondary programs and the community college is facilitated by the regional coordinator who spends one day per week as a community college staff member.

In PAVTEC, program coordination is conducted by the community college and a council of representatives. The community college and each of the 12 participating school districts designate one or more council representatives. Other members include representatives from business, industry and labor; higher education; and state and regional educational agencies. The ultimate goal of coordination is to provide a seamless transition from secondary programs to community colleges and to entry-level employment.

In Douglas County, high school and community college instructional staff have cooperatively developed a list of competencies for each class that students must satisfy to receive college credit. They have developed a procedure designed to simplify the process of receiving community college credit for selected courses taken in high schools.

In the Umatilla/Morrow region, a high level of coordination exists among businesses, high schools, the community college and other agencies involved in professional technical education. All high schools have articulated curriculum agreements with the community college. Any high school may teach any of the 2+2/Tech Prep classes. The course goals are the same for high school and college courses.

Staff Development

A key ingredient of the exemplary practices is a dedicated staff and continual efforts to upgrade staff capabilities. As a PAVTEC coordinator indicated, students are in good hands because the teachers are enthusiastic and dedicated. Contracting with the Business Education Compact of Washington County, PAVTEC provided more than 100 assistantships in 1992 for teachers to be placed in summer workplace experiences for 3-8 weeks.

In the Coos/Curry region, the two instructors who team-teach the technology program at North Bend Junior High were instrumental in both the development and implementation of the program. One of the instructors attended a week-long workshop to obtain more specific information before taking the initial steps to develop the program.

One of the first steps in developing the PLC program in the Umatilla/Morrow region was to initiate staff development workshops to train nine regional high school teachers in PLC hardware and software applications. The regional coordinator and the Umatilla ESD coordinated the purchase of equipment needed for the staff training effort.

Long-range Strategic Planning

Change is a process and successful innovations require long-range strategic planning. In the Umatilla/Morrow region, for example, local leaders have committed 10 years to developing curricula so that every high school in the region has access to career guidance

and applied academics. In Douglas County, the community college had maintained a relationship with Toyota for five years before becoming a business partner in the T-10 automotive training program. The Coos/Curry region has developed a five-year implementation plan which includes the development of a communications computer lab and a series of modules that expose students to a variety of technologies.

PAVTEC conducts an annual strategic planning meeting to generate ideas for program expansion and improvement. The meeting is attended by representatives from participating high schools, the community college, and the private sector. The participants spend two days reviewing the year's activities, assessing future regional needs and directions, and determining methods to best address the needs.

Resource Support

Finally, resource support is another critical factor in developing and implementing exemplary practices. PAVTEC's record of activities and services has demonstrated how federal, state and local dollars can work together to achieve maximum benefits for students participating in professional technical programs. It is currently allocating funds among five regional teams to develop model TPAD programs.

In the Coos/Curry region, the technology program was supported by donations from local sources and some matching funds from the school district. The program would not have been developed without these resources. The regional coordinator is seeking additional grants to replicate the program in other schools and to provide inservice opportunities for other interested staff.

In Douglas County, Carl Perkins and Workforce 2000 funds were used to purchase new equipment, provide staff development activities, and to support curriculum development. The T-10 program benefited from a donation from Toyota for facilities improvement. The company also donated automobiles for students to work on as well as all necessary repair equipment and tools.

Local leaders in the Umatilla/Morrow region feel that their improvement efforts would not have occurred without the additional funding from state, federal, and private sources. As the regional coordinator put it, *"We simply couldn't have done it without the Perkins and Workforce allocations."*

IV. CONCLUSIONS AND RECOMMENDATIONS

Each of the study components has provided a wealth of information on the status of professional technical education in Oregon as reflected in existing data and as perceived by the various stakeholder groups. Based on the nature of the findings, it is appropriate to offer two sets of conclusions and recommendations: those pertaining to the overall professional technical education program and those specific to several critical program areas.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

Commitment and Priorities

With the passage of HB3565 and the implementation of the Workforce 2000 I and II Acts, the state has added new dimensions to its efforts to improve professional technical education and workforce training activities. Most educators and other stakeholder groups welcome these initiatives as a catalyst for a new wave of school reform activities that must be implemented if Oregon is to adequately prepare its students and workers for the 21st century. While these efforts have enhanced both the nature and scope of professional technical education, the bulk of the work in terms of implementation remains to be accomplished. In view of the current budget shortfalls and in the climate of Measure 5, an uneasy feeling exists among many school staff and program administrators that the commitment and priorities set in motion by the state may lose their momentum. Moreover, many policymakers and administrators believe that to continue to implement elements in the reform package, an increasingly greater amount of resources will be needed.

We recommend that the state reaffirm its commitment and priorities by providing resources to maintain and build on the momentum it has achieved in improving professional technical education and workforce training in the state.

Attitudinal Barriers

Strong evidence suggests that negative attitudes toward professional technical education pose a serious barrier to the implementation of the reform package. Many parents, students and school staff define success as a four-year college degree. They perceive professional technical education as less than desirable, a dumping ground for less able students. Indeed, many school staff see their job as preparing students for four-year colleges. The pervasiveness of these attitudes among parents, students and school staff themselves calls for an extensive and sustained educational campaign to increase awareness of the importance and value of professional technical education in creating a world class workforce for the 21st century.

We recommend that the state in collaboration with business, industry, and labor make a concerted effort to carry out such a campaign as an integral part of its strategy for improving professional technical education. To help change the negative image of professional technical education, the state should develop a marketing strategy,

including the use of the mass media, to give the general public a more accurate depiction of the critical role of professional technical education in building a secure future for the state and its people. At the same time, the state should increase its efforts to improve program quality through rigorous evaluation of individual professional technical education programs. This is imperative if professional technical education is to shed its negative image and to convince skeptics that its image problem is not a result of poor program quality.

Accomplishments

During the past several years, significant and far-reaching improvements have been made in professional technical education and workforce training programs in the state:

- Professional technical education has gained increased visibility
- Additional resources (e.g., Workforce 2000 I and II funding) have been provided
- Program coordination has improved through such innovations as 2+2/Tech Prep programs
- Involvement of business, industry and other stakeholder groups has become more intense and meaningful
- Special populations are now better served
- Applied academics have been more extensively incorporated
- Signs indicate that attitudes toward professional technical education are slowly changing for the better
- The quality of Job Training Partnership Act (JTPA) programs has continued to improve

In addition, the Workforce 2000 I and II Acts have contributed to the development and refinement of 2+2/Tech Prep programs, the improvement of technology education, and the upgrading of equipment for professional technical education. Moreover, Workforce 2000 II programs have placed increased emphasis on business-education partnerships, staff development, science and mathematics education, assessment of program outcomes, and the implementation of educational reform at the secondary level. This increased emphasis is congruent with workforce development needs identified in the present study and serves to reinforce the state's commitment to having a globally competitive workforce by the year 2010.

While formidable challenges and obstacles remain, professional technical education practitioners and policymakers have reasons to be encouraged by these recent developments.

We commend the local, regional, and state level leaders for their outstanding contributions to professional technical education and recommend that they continue their collaborative efforts in building a world class workforce for the 21st century.

SPECIFIC CONCLUSIONS AND RECOMMENDATIONS

Involvement of Stakeholder Groups

The participation of business, industry, and labor in professional technical education is highly beneficial. However, it has not been as extensive as it could be. In some cases, such involvement has been limited and short-term, lessening its value in improving program practices. Labor's participation, in particular, has been much less than it could be. In many cases, the involvement does not include areas in which maximum benefits can be achieved (e.g., internships for teachers and work-based learning for students). In addition, the bulk of response has come from larger businesses; small businesses seldom participate. Parental involvement is essentially non-existent.

We recommend that concerted efforts be made to increase the involvement of all stakeholder groups in general and the involvement of business, industry, and labor in particular. Such efforts should ensure that (a) the stakeholder groups are well prepared (e.g., through orientation and debriefing meetings) to engage in meaningful involvement, (b) their involvement is consistent and long term, and (c) turf issues, a major barrier to effective involvement, are addressed. Also, parents should be given an active role in the development and implementation of professional technical education.

We further recommend that such involvement occur in areas where it counts the most. This includes: (a) providing internships for teachers and structured work experiences, including apprenticeships, for students; (b) infusing industry standards in curriculum development; (c) assessing the needs of business, industry, and labor; and (d) obtaining and using labor market information. In addition, special efforts should be made to encourage and facilitate the involvement of small businesses and labor. Such involvement should be facilitated through the use of waivers from restrictive rules and regulations whenever possible.

Other steps the state may take include:

- ***Make business, industry, and labor a part of the decisionmaking process at all levels of professional technical education and the workforce development system.***

- ***Provide incentives for business, industry, and labor to become involved in professional technical education and workforce training programs. For example, tax credits may be provided to induce business to provide students with structured work experience.***

- ***Conduct periodic surveys with business, industry, and labor to determine their education and training needs and the extent to which those needs are met.***

Program Coordination

Great variation exists in the extent of program coordination among different levels of the professional technical education system. The strongest linkage exists between high schools and community colleges, mainly through 2+2/Tech Prep articulation agreements. Coordination with four-year colleges is very limited, if it exists at all. Coordination with middle schools and private vocational schools is virtually non-existent. Programs funded through Workforce 2000 I and II appear well coordinated with Carl Perkins programs, but much less so with JTPA and Job Opportunities and Basic Skills (JOBS) programs. In many cases, coordination is hampered by (a) a lack of time or the absence of a designated staff person to carry out the coordination function, (b) a lack of understanding of the other agencies, (c) divergent goals of different programs, and (d) turf issues needing to be addressed.

We recommend that, in order to establish a coherent system of professional technical education, greater attention and increased resources (in the form of release time or staff positions) be dedicated to program coordination. Such efforts should be designed to (a) eliminate duplicated services within and across programs, (b) strengthen 2+2/Tech Prep programs as a vital means of coordination between high schools and community colleges, and (c) create a consistent and common vehicle for recordkeeping and information dissemination. In addition, the recently created Workforce Quality Council should assume an increasingly proactive role in bringing together business, industry, labor, and government to develop a more focused and coherent workforce training system. The state should study the feasibility of creating a single agency to administer most, if not all, of the workforce programs, as suggested by the Workforce Quality Council.

Information System

There is a general dearth of outcome data based on uniform performance measures and standards across the existing professional technical education programs. This makes the sharing of meaningful information among different state agencies and the evaluation of individual programs difficult, if not impossible.

We recommend that the state continue to expedite its current effort to establish a shared information system to maintain outcome data as well as to disseminate program information among different state agencies. Such a system should be decision-focused and should incorporate a set of uniform measures and standards consistent with those specified in the Oregon Benchmarks. It should also have the capability of tracking professional technical students over time to provide longitudinal data for planning and evaluation purposes.

Curriculum and Instruction

Most high school and community college students in professional technical education are taking applied academics courses—the most popular are Applied Mathematics and Applied Communication. Applied academics are generally well received by students, who rate very favorably both the course contents and instructional methods. However, because of the fullness of the mandated curriculum, applied academics classes are usually offered as electives. When budget cuts occur, applied academics are among the first to be eliminated from the curriculum. Only a small percentage of students have participated in structured work experience programs. At the high school level, little structured work experience is provided. When available, work experience tends to be loosely organized, mostly unsupervised, and generally contingent upon students being able to find jobs which may or may not be related to their occupational goals. Apprenticeship programs are rare at both the high school and community college levels. The provision of structured work experience is especially problematic in remote rural areas where resources are limited and businesses are small and few. In addition, the availability and use of industry standards in curriculum development and the use of competency-based approaches in instruction are not widespread.

We recommend that greater attention be paid to curriculum and instruction issues with a view to increasing (a) the provision of structured work experiences, (b) the use of available industry standards in curriculum development, and (c) the use of competency- or outcome-based approaches in delivering instruction. We further recommend that where they do not exist industry standards be developed for use in curriculum development and instruction.

Student Preparation

A large number (up to one half or more) of high school students are not well prepared to take professional technical education courses at community colleges. Lacking basic skills in mathematics, science, writing, and computer skills, these students often require more instructional time to benefit from community college programs. The Tech Prep/Associate Degree model provides a framework for this kind of planning.

We recommend that high school programs be strengthened to better prepare students for further education in professional technical areas. To this end, the high school programs should (a) consider the increased use of competency-based instruction, (b) provide more hands-on experience, (c) upgrade equipment and facilities, and (d) place increased emphasis on proficiency and application of skills in mathematics, English, reading, and writing.

Special Populations

The enrollment of special populations (e.g., females in nontraditional occupations and disadvantaged, limited English proficient, and disabled students) and their use of support

services have increased during the past two years. The increase is mainly due to (a) better support services, (b) better coordination with other agencies, and (c) better staff development in this area.

We recommend that efforts to increase the enrollment of special populations be continued and intensified by (a) encouraging special students to enroll in professional technical education, (b) better marketing of available services, and (c) changing negative attitudes toward nontraditional occupational options (e.g., women in manufacturing industries).

Professional Development

Most professional technical educators participate in professional development activities during the school year and provide highly favorable ratings on the effectiveness of these activities. The most prevalent activities are professional association meetings and seminars or workshops. Much less common are peer coaching/guided practice and internships.

We recommend that this trend be continued with increased emphasis on internships with business and industry. We further recommend that professional development activities include all teachers and counselors to raise their awareness of the world of work and to improve their attitudes toward professional technical education in general.

These professional development activities should place particular emphasis on (a) integrating professional technical education with the entire school curriculum, not just applied academics classes, and (b) providing structured work experiences for students.

Economic Development Priorities

A significant number of educators, including some professional technical program administrators, are not familiar with the economic development priorities in their respective regions. Many are not familiar with the priorities for the state as a whole. A quarter or less of the administrators indicate that they are aware of plans to continue programs started under Workforce I and II in their respective regions. If professional technical education and workforce development efforts are to be highly congruent with and supportive of specific economic development objectives, much more needs to be done to publicize such objectives.

We recommend that greater efforts be made to raise public awareness of the economic development plans of the respective regions as well as the overall priorities which the state as a whole is pursuing. We further recommend that steps be taken to increase the use of labor market information in designing professional technical education programs.

Development of Effective Practices

The case studies reveal that the essential ingredients of exemplary practices are (a) strong local leadership, (b) extensive private sector involvement, (c) emphasis on the use of technology, (d) incorporation of competency-based curriculum and instruction, (e) effective program coordination, (f) commitment to building staff capabilities, (g) long-term strategic planning, and (h) adequate resource support.

We recommend that local, regional and state level policymakers promote and nurture these ingredients in future program development and implementation so that effective practices are developed and replicated on an ongoing basis.

Dissemination of Effective Practices

In most instances, professional technical educators find out about effective practices through discussions with colleagues, at professional conferences, in reading, or by site visits. They share information on such practices in much the same ways.

Inasmuch as sharing effective practices is vital to the overall effort to improve professional technical education, we recommend that more extensive and systematic approaches be developed to disseminate such information. Examples include developing a dedicated newsletter and/or an electronic bulletin board on effective programs and using video technology (e.g., short videotapes on effective practices) to disseminate relevant information to a wider audience in a timely manner.

TECHNICAL APPENDICES

A. LIST OF ACRONYMS AND ABBREVIATIONS

B. BIBLIOGRAPHY

C. DETAILED SURVEY RESULTS

A. LIST OF ACRONYMS AND ABBREVIATIONS

LIST OF ACRONYMS AND ABBREVIATIONS

Abbreviations and acronyms (other than standard dictionary abbreviations) used in this report are listed below:

AFS	=	Adult and Family Services
CAD	=	Computer Aided Drafting
CAM	=	Certificate of Advanced Mastery
CIM	=	Certificate of Initial Mastery
CIP	=	Classification of Instructional Program
CNA	=	Certified Nursing Assistant
CORD	=	Center for Occupational Research and Development
CWE	=	Cooperative Work Experience
DEQ	=	Department of Environmental Quality
EPA	=	Environmental Protection Agency
ESD	=	Educational Service District
ESL	=	English as a Second Language
FFA	=	Future Farmers of America
FWO	=	Future Workers of Oregon
HB3565	=	(Oregon) House Bill 3565, Oregon Educational Act for the 21st Century
JOBS	=	Job Opportunities and Basic Skills
JTPA	=	Job Training Partnership Act
MIS	=	Management Information System
NCRVE	=	National Center for Research in Vocational Education
NPC	=	Northwest Policy Center
NWREL	=	Northwest Regional Educational Laboratory
OAFS	=	Oregon Automated Follow-up System
OCCS	=	Office of Community College Services
OIC	=	Occupational Information Committee
OIT	=	Oregon Institute of Technology
OPTE	=	Office of Professional Technical Education
OSHA	=	Occupational Safety and Health Division
PAVTEC	=	Portland Area Vocational Technical Education Consortium
PIC	=	Private Industry Council
PLC	=	Programmable Logic Controller
SACCVE	=	State Advisory Council for Career and Vocational Education
SERVE	=	Secondary Education Reporting of Vocational Enrollment
SIS	=	Shared Information System
TPAD	=	Technical Preparation/Associate Degree
TQM	=	Total Quality Management
WQC	=	Workforce Quality Council

B. BIBLIOGRAPHY

BIBLIOGRAPHY

Relevant articles, reports and documents reviewed during the course of the study are listed below.

America's Choice: high skills or low wages! The Report of the Commission on the Skills of the American Workforce, National Center on Education and the Economy, June 1990.

Benchmarks & Milestones, A Statistical Summary of Regional 2+2/Tech Prep Activities. 1992 annual report, Mt. Hood Regional Cooperative Consortium.

Commissioner's Task Force on Accountability Final Report, Officer of Community College Services, October 1992.

Directory of Secondary Schools Offering Approved Professional Technical Education Programs, 1991-92. Office of Professional Technical Education, Oregon Department of Education.

External Evaluation of Secondary Professional Technical Education Programs. Office of Professional Technical Education, Oregon Department of Education.

Final Report on Vocational Education Local Program Improvement Funds, Fiscal Year 1991. Office of Professional Technical Education, Oregon Department of Education.

Grubb, W. N., & McDonnell, L. M. (1991). *Local Systems of Vocational Education and Job Training: Diversity, Interdependence, and Effectiveness*. Berkeley, CA: National Center for Research in Vocational Education.

Hoachlander, E. G., Arnold, C. L., & Levesque, K. A. (1992). *Secondary and Postsecondary Vocational Education in Mississippi: An Evaluation*. Berkeley, CA: National Center for Research in Vocational Education.

Hoachlander, E. G., & Rahn, M. L. (1992). *Performance Measures and Standards for Vocational Education: 1991 Survey Results*. Berkeley, CA: National Center for Research in Vocational Education.

Hoachlander, E. G., Kaufman, P., & Wilen, E. (1991). *Indicators of Education and the Economy*. Berkeley, CA: National Center for Research in Vocational Education.

"House Bill 3565." 66th Oregon Legislative Assembly, 1991 regular session.

Job Training Partnership Act 1991 Annual Report. Oregon Economic Development Department.

Learning a Living: A Blueprint for High Performance, A SCANS Report for America 2000. The Secretary's Commission on Achieving Necessary Skills, U.S. Department of Labor, April 1992.

McDonnell, L. M., & Grubb, W. N. (1991). *Education and Training for Work: The Policy Instruments and the Institutions*. Berkeley, CA: National Center for Research in Vocational Education.

Oregon Annual Performance Report for 1991 (Carl Perkins Vocational Education Act). Office of Professional Technical Education, Oregon Department of Education.

Oregon Benchmarks: Setting Measurable Standards for Progress, Report to the 1991 Oregon Legislature, Oregon Progress Board, January 1991.

Oregon Business and Industry Intern Program. Oregon Department of Education, Office of Professional Technical Education, n.d..

Oregon Community Colleges Unified Reporting System, Baseline Design and System Implementation Plan (Discussion Draft), Executive Consulting Group, Inc. Seattle, WA., November, 1992.

Oregon Employer Survey, Worker Training & Work Organization. Workforce Quality Council, June 1992.

Oregon Standards and Measures for Secondary Professional Technical Education Programs, 1991-96. Office of Professional Technical Education, Oregon Department of Education.

Oregon's State Plan for JOBS (Title IV-F) for 1992-1994. Oregon Department of Human Resources, Adult and Family Services Division.

Oregon's Workforce Development System: A State Level Reorganization Plan for the Year 2000 (Draft Version). Oregon Workforce Quality Council, November 1992.

Oregon's Workforce Development System: A Vision for the Year 2000 (Draft Version). Oregon Workforce Quality Council, September 1992.

Professional Technical Education Evaluation Handbook, Improving Programs in Oregon Community Colleges (Administrative Draft). Office of Professional Technical Education, Oregon Department of Education, August 1992.

Professional Technical Education Evaluation Handbook, Improving Programs in Oregon High Schools (Administrative Draft). Office of Professional Technical Education, Oregon Department of Education, August 1992.

Professional Technical Education Evaluation Guidelines, Institutional Planning and Reporting for Oregon Community Colleges (Administrative Draft). Office of Professional Technical Education, Oregon Department of Education, August 1992.

Profile 1990-91. Oregon Office of Community College Services, July 1992.

Shared Information System. Employment Division and other state agencies, May 1992.

Secondary Education Reporting of Vocational Enrollment (SERVE), 1991-92. Oregon Department of Education, Salem, Oregon.

Vocational Program Evaluation Handbook for Oregon Community Colleges Under Public Law 98-524 and Civil Rights Compliance (Revised). Oregon Department of Education, July 1991.

Workforce Planning & Evaluation Information, Occupational Program Planning System Biennial Report for 1989-91. Employment Division, Oregon Department of Human Resources.

Workforce 2000 I Summary Report. Office of Community College Services and Office of Professional Technical Education, Oregon Department of Education, January 1992.

C. DETAILED SURVEY RESULTS

SURVEY OF HIGH SCHOOL TEACHERS AND COUNSELORS

A total of 159 teachers and 40 counselors from 34 high schools participated in the survey. Most have been with their schools for more than six years. A breakdown of their tenures is as follows:

Years	Percent
Less than 1 year	11
1 to 5 years	20
6 to 10 years	17
11 to 15 years	21
More than 15 years	18

Involvement of Stakeholder Groups

According to respondents, a range of stakeholder groups are involved in planning professional technical education programs. However, in all cases, less than one-half provide high ratings (a rating of 4 or 5 on a 5-point scale) on the extent of their involvement. A breakdown of high ratings by stakeholder group is as follows:

Group	Percent
Regional consortia	38
Business	32
Industry	25
Community groups	22
Labor	18
Public employees	21
Private Industry Council	15

When asked how beneficial the involvement of the stakeholder groups is, most respondents provide highly positive ratings:

Group	Percent
Community groups	56
Industry	56
Regional consortia	50
Labor	42
Private Industry Council	42
Public employees	42
Business	36

Respondents who rate the involvement of the stakeholder groups as not beneficial point out the following limitations:

- Some stakeholder groups lack knowledge of professional technical education. They are not aware of the needs because they are not affiliated with workforce programs.
- The involvement is short-term and not consistent.
- The groups lack organization.
- Larger districts get most of the attention.
- Some groups provide very little input and do not seem to really care.
- There are turf issues. People are concerned with keeping their jobs.
- The regional consortium is too spread out.
- Community groups often have an axe to grind which interferes with the committee's effectiveness.

Program Coordination

Community Colleges

Overall, less than one-third (28 percent) of respondents provide positive ratings (a rating of 4 or 5 on a 5-point scale) on how well services are coordinated between high schools and community colleges.

Most (53 percent) indicate that the linkage between high schools and community colleges is established through meetings between the two faculties. Other means of providing a linkage include:

Linkage	Percent
Joint curriculum development	39
Visits to each other's classes	18
Sharing instructors in the classroom	8

Most (70 percent) indicate that they met with community college staff or administrators as part of their work during the past school year.

A wide range of topics are discussed at these meetings. Examples include:

Topic	Percent
2+2/Tech Prep programs	50
Program coordination	42
Curriculum development	34
Tech Prep/Associate Degree (TPAD) programs	28
Special support services for students	20
Applied academics	17

Most respondents indicate that the discussions are very useful. Some discussions, for example, result in new teaching techniques and updated materials. Others lead to plans for curriculum and program development or 2+2/Tech Prep program agreements. Perhaps one respondent captures the sentiment of several others with the following statement: *"Very useful...just wish we had time to follow through with our great plans."*

School staff identify some major barriers to effective program coordination between high schools and community colleges. The most notable ones are:

Barrier	Percent
Lack of time	75
Protecting one's turf	14
No perceived need	11

Other obstacles identified include:

- Lack of planning time
- Lack of release time to do planning
- Excessive workload and too many changes taking place at once
- Remoteness and distance between campuses
- Not having a community college to work with
- Lack of program information
- Lack of interest on the part of regular staff

To overcome these barriers, respondents suggest the following:

- Increase awareness that professional technical programs are as important as the regular academic program
- Hire substitutes (release time) for teachers to meet during school hours
- Acquire a full-time coordinator for program coordination
- Provide more summer workshops for teachers
- Increase the number of professional technical education courses
- Make professional technical education a school wide priority
- Allow more flexibility to shift instructors to provide more classes
- Conduct outreach activities

Four-Year Colleges

Only a small number (17 percent) of respondents indicate that they meet with four-year college staff or administrators to discuss applied academics programs. In most instances, discussions deal with the following topics:

- Program development and curriculum changes
- Computer technology and networks
- College position on accepting applied academic credit

- Applied course work versus college preparation
- Implications of HB3565

Workforce Programs

Less than one-half (45 percent) of respondents feel that Workforce I and II programs are well coordinated with Carl Perkins programs. They rate the coordination favorably. A much smaller percentage provide similarly positive ratings on coordination between Workforce and the other programs:

Program	Percent
The total educational program	30
JTPA programs	29
JOBS programs	16

According to respondents, major barriers to coordination include:

Barrier	Percent
Lack of time	46
Lack of understanding of the other agencies	36
Divergent goals among the programs	23
Lack of incentives	17
Turf issues	8

Other respondents identify additional barriers as follows:

- Lack of communication
- Lack of release time for instructors to meet
- School staff not being aware of the other agencies
- Program changes occurring from year to year
- The big schools getting all the money

To overcome the barriers, respondents suggest the following strategies:

- Increase coordination at the state level to provide better direction.
- Make information available to all stakeholder groups.
- Improve communications through site visits and sharing resources.
- Conduct workshops to develop better understanding of each other.
- Allocate more time for planning and coordination.
- Put a ceiling on case loads like other states.
- Develop statewide goals for professional technical education (e.g., to produce an educated workforce capable of finding and holding a job).

- Walk the talk. As one respondent put it: *"Stop talking and forming more committees and just do it. Put teeth into HB3565 so that everyone can go in the same direction and better prepare students for the workforce."*

Curriculum and Instruction

Curriculum Standards

Approximately a quarter (26 percent) of respondents provide favorable ratings on the extent to which curricular materials are developed according to industry standards. Examples include:

- Industrial standards for cabinet making
- Food safety and sanitation standards
- Building construction
- Associated General Contractor curriculum
- Automated accounting
- Word processing
- Typing and shorthand skills
- Business management
- Computer literacy

Instructional Approach

More than one-third (35 percent) of the respondents provide favorable ratings on the extent to which instruction is delivered in a competency-based approach. The approach entails the specification of curriculum goals and objectives and a timeframe. Students are required to demonstrate their mastery of the competencies. In most cases, mastery of competencies is assessed through performance assessment, portfolios, or student projects. Teacher judgment and competency checklists are also used to assess proficiency.

Applied Academics

One-half (50 percent) of respondents indicate that their schools provide applied academics as part of TPAD programs. More than one-third (27 percent) said applied academics are not provided in that way. The remainder (23 percent) are not sure.

Structured Work Experience

According to respondents, many types of structured work experience opportunities are offered by the high schools. They identify the following as the most common

Type	Percent
Cooperative work experience	68
General work experience	55
Career shadowing	34

Type	Percent
Mentoring	24
Exploratory	19
Internship	13
Apprenticeship	13

It should to noted that the term "apprenticeship" is used in this report to include general work-based learning, not necessarily the participation in formal apprenticeship programs.

Perceived Impact

More than one-half (56 percent) of school staff feel that their schools do a good job in preparing students for professional technical education courses at the community college level.

According to respondents, several things could be done to better prepare the students. Examples include:

- Provide competency-based instruction
- Reduce class size to provide more hands-on experience
- Provide more applied academics and other related courses
- Upgrade equipment and programs to keep up with technological advancement
- Offer more advanced courses to students
- Provide more time for better communication and coordination between community colleges and high schools
- Increase contact and involvement with businesses
- Make courses more relevant to the job market
- Improve the computer network and get it current
- Allow more instruction time for courses
- Provide career exposure to students early so they can decide on courses and stick with them
- Teach towards the community college curriculum objectives and goals
- Work communication skills (especially writing skills) into all vocational areas

Special Populations

Approximately one-third of the respondents report that enrollment of special populations in professional technical education classes has increased during the past two years. A smaller percentage indicate that the use of support services for the special populations has increased. A breakdown of the data is shown in Table 1 below.

The data suggest a general increase in the enrollment of special populations. They may also imply that the use of support services is not commensurate with the increase in enrollment and that such support services may need to be better publicized.

Respondents report an array of efforts which their schools have made during the last two years to help the special populations gain greater access to or achieve greater success in professional technical education programs. Notable examples include:

Examples	Percent
Better support services such as making tutors available	35
Better coordination with other service agencies to help students	28
Better staff development in this area	21
Better marketing of available services	19

Table 1
Reported Increase in Special Populations Enrollment and Their Use of Support Services

Special Population	Percent of Staff Reporting Increase in Enrollment	Use of Support Services
Women	33%	15%
Disadvantaged students	43	35
Limited English proficient students	34	25
Disabled students	30	30
Other	15	5

Respondents identify a variety of barriers to greater access by the special populations. These include:

- Cost of counseling
- Recent budget cuts
- Women not realizing they can succeed
- Lack of priority with administration
- Lack of money to develop programs and hire staff
- Lack of encouragement from advisors
- Not enough time to coordinate
- Small rural communities having limited resources and too far away from most services
- Emphasis on college prep programs and lack of support for professional technical education
- Professional technical education being seen as a dumping ground
- Lack of knowledge by school staff and administrators
- Parents not wanting their daughters enrolled in voc tech classes

Respondents offer several suggestions for improving the situation:

- Make available more support staff. Counselors need to get more involved and provide better counseling about options.
- Offer more professional technical courses, especially those specifically designed for women.
- Use better strategies (e.g., more advertising) to market the curriculum and to help ensure job placement.
- Provide more help to students with very low reading and writing skills.
- Encourage women to enroll in nontraditional courses for better paying careers.

Professional Development

During the past school year, a significant proportion of the school staff spent a significant number of hours on professional development activities. A breakdown of these activities and their effectiveness as perceived by respondents is presented in Table 2 below.

Table 2
Professional Development Activities for High School Teachers and Counselors

	Percent of Staff	Number of Hours	Effectiveness		
			High	Medium	Low
Professional association meetings or conferences	79%	29	34%	49%	17%
Seminar/workshops	76	51	46	36	18
Internship at a business or industry site	18	84	61	18	21
Peer coaching/guided practice	13	18	50	25	25
Special interest group networking	26	26	43	33	24

These data suggest that the various professional development activities are well received by school staff, with a large majority (more than 70 percent) providing favorable ratings on their effectiveness. The average hours for each activity suggest the intensity of the respective professional development activities. They do not reflect the prevalence of the activities. For example, the high average hours (84) for internships results because an internship generally lasts several weeks or months. However, only 18 percent of respondents participate in internships.

Those who provide low ratings on effectiveness make the following suggestions for improvement:

- More time should be provided for peer coaching to work
- There is a need to set realistic goals and to develop plans to achieve the goals; incentive and motivation should also be provided
- More attention should be paid to outcomes; people need to see a change, not just talk

Effective Practices

Virtually all (99 percent) of the school staff indicate that they find out about effective practices in professional technical education through discussions with colleagues. Other means of sharing effective practices include:

Practice	Percent
Professional conferences	72
Reading	63
Visiting other programs	52

A small number (7 percent) indicate that they find out about effective practices through other means.

A predominant majority (87 percent) of the school staff indicate that they share effective practices with colleagues or other institutions through discussions with colleagues. Other ways of sharing include:

Method	Percent
Professional conferences	59
Inviting others to visit	37
Writing articles	7

To disseminate effective practices more effectively, respondents provide the following suggestions:

- Make available time and money for teachers to visit effective programs.
- Provide written information on effective practices.
- Increase staff development through workshops and conferences.
- Start a newsletter specifically for professional technical education.
- Set up a statewide computer bulletin board of outstanding programs.
- Provide release time for teachers to find out about effective practices

Suggestions for Improvement

Respondents provide a range of suggestions for improving professional technical education in their respective regions:

- Provide better program coordination at all levels
- Upgrade equipment and facilities
- Acquire more resources for staff development (e.g., workshops and conferences)
- Provide more instructional time for students
- Increase involvement of business, industry and labor
- Integrate professional technical education with academic education
- Diversify and upgrade existing programs
- Allow adequate planning time
- Establish internships or apprenticeships when and where possible.
- Strengthen articulation between high schools and community colleges and develop more 2+2/Tech Prep and Tech Prep/Associate Degree programs
- Change the image of professional technical education and increase awareness of its value
- Visit industry to find out what skills are needed to enter the workforce
- Start a newsletter to share program information
- Give high priority to professional technical education
- Provide an alternative certification process to recruit teachers from business and industry
- Dispel the belief that success means a four-year college degree

SURVEY OF COMMUNITY COLLEGE TEACHERS AND COUNSELORS

Eighteen counselors and 89 teachers from 16 community colleges participated in the survey. A small number are with the Advanced Technology Center (9 percent) or a community-based skill center (7 percent).

A predominant majority have been with their schools for six or more years. A breakdown of their tenures is as follows:

Years	Percent
Less than 1 year	2
1 to 5 years	8
6 to 10 years	23
11 to 15 years	47
More than 15 years	20

Involvement of Stakeholder Groups

Respondents indicate that a range of stakeholder groups is involved in planning professional technical education programs. Most provide high ratings (a rating of 4 or 5 on a 5-point scale) on the extent of business and industry involvement. A breakdown of high ratings by stakeholder group is as follows:

Group	Percent
Business	64
Industry	61
Regional consortia	36
Labor	2
Public employees	29
Community groups	29
Private Industry Council	21

When asked how beneficial the involvement of the stakeholder groups is, most respondents provide positive ratings:

Group	Percent
Industry	78
Business	76
Labor	51
Regional consortia	45
Community groups	47
Public employees	43
Private Industry Council	40

Respondents who provide unfavorable ratings (a rating of 1 and 2) provide the following reasons for their ratings:

- Stakeholder groups are too narrowly focused and have too little background data to work with.
- Some stakeholders too often try to exert influence beyond their qualifications, knowledge, or ability.
- The focus is too general in nature and not relevant to specific needs of professional technical students.
- The involvement is more political than educational.
- The involvement is very limited.
- Stakeholders are more concerned about OSHA standards than educational standards.

Program Coordination

High Schools

When asked to rate how well professional technical education services are coordinated between secondary schools and community colleges, approximately one-third (32 percent) of the respondents provide positive ratings.

Respondents report a number of ways in which a linkage is provided between professional technical education programs offered by their community colleges and those offered in secondary schools, including:

Linkage	Percent
Meetings between the two faculties	80
Joint curriculum development	58
Visits to each other's classes	33
Sharing instructors in the classroom	8

Many respondents report other means of linkage. Examples are:

- Job fairs where secondary students and counselors attend industry tours and demonstrations
- Scholarship programs
- Presentations by community college staff at high schools
- Judging contests (e.g., regional skills contest)
- Working with advisory committees
- Community college staff providing training for high school tech prep teachers

Most respondents indicate that they met with secondary school staff or administrators as part of their work during the past school year to discuss the following topics:

Topic	Percent
Program coordination	58
2+2/Tech Prep programs	51
Curriculum development	45
Tech Prep/Associate Degree (TPAD) programs	43
Applied academics	32
Special support services for students	25

Twelve percent report that they meet with secondary school staff to discuss computer network administration, nontraditional careers for women and men, CIM and CAM development, support for new technologies, equipment coordination, and articulation of cooperative credits for college composition.

Their perceptions of their meetings with secondary school staff are uniformly positive. Virtually all respondents describe their experience in such terms as "extremely useful," "excellent," "absolutely critical," or "one of the best things to do."

Only eight percent indicate that there are no barriers to an effective coordination of professional technical education services between secondary schools and community colleges. The others report several major barriers, including:

Barrier	Percent
Lack of time	67
Protecting one's turf	28
No perceived need	21

A number identify several other barriers:

- Lack of development fund
- Lack of knowledge of what the goals are
- Secondary school faculty not being linked with business and industry
- Lack of release time to increase communication and planning
- To overcome these barriers, according to the respondents, there should be:
- Greater release time to develop communication links
- Adequate staffing
- Greater commitment from school administration
- Flexibility in hiring industry people with degrees in their field to be instructors
- More certificate or short-term programs

Private Schools

Only 6 percent of respondents provide positive ratings on the coordination between community colleges and private vocational schools. Several question the need or appropriateness of coordinating with private vocational schools. A few indicate that private schools do not offer the same disciplines or fields of study. As one respondent puts it: *"Private schools are focused on income, the community college on service.... it is not realistic to expect this dichotomy to go away."*

Four-Year Colleges

One-third (33 percent) of respondents indicate that they meet with four-year college staff or administrators to discuss applied academic programs. In most instances, the discussion focuses on education reform, staff training, curriculum coordination, transfer program development, and articulation with the four-year colleges. Also in most instances, they describe the discussions as very useful. As one respondent puts it: *"It was interesting and valuable to learn what is going on in other areas. It provided a feeling of esprit de corps."*

Workforce Programs

Approximately one-half (51 percent) of respondents feel that Workforce I and II programs are well coordinated with Carl Perkins programs. They rate the coordination favorably. A much smaller percentage provide similarly positive ratings on coordination between Workforce and the other programs:

Program	Percent
JOBS programs	34
The total educational program	34
JTPA programs	22

According to respondents, major barriers to coordination include:

Barrier	Percent
Lack of time	38
Lack of understanding of the other agencies	36
Divergent goals among the programs	29
Turf issues	18
Lack of incentives	14

Other respondents identify additional barriers. Examples include:

- The desire by government for short term training does not fit into our programs
- Lack of resources
- Unclear goals

- Too much emphasis on special populations
- Emphasis on political correctness instead of serving students
- Coordinators not being familiar with the level of skill required to enter college programs

Some suggestions for improvement are as follows:

- Combine agencies and pool their resources into fewer programs to eliminate duplicated services
- Increase the commitment of school administration
- Provide release time for instructors to exchange ideas and to work together
- Reduce emphasis on political correctness and focus on achieving real goals
- Create a consistent, timely, and common vehicle to disseminate information (e.g., a monthly newssheet)
- Provide real incentive to cooperate rather than bureaucratic paper sessions

Curriculum and Instruction

Curriculum Standards

Most respondents (68 percent) provide favorable ratings on the extent to which curricular materials are developed according to industry standards. Examples include:

- Nursing standards of practices
- Standards incorporated in licensing exams
- Standards issued by the American Dental Association
- Standards issued by accrediting agencies

Instructional Approach

Most respondents (56 percent) provide favorable ratings on the extent to which instruction is delivered in a competency-based approach.

Typically, the competency-based approach require the student to meet one or more of the following requirements:

- Demonstrate proficiency in specific skills areas
- Meet predetermined standards to receive passing grades
- Take a test on practical skills prior to working in the community
- Perform activities to acceptable levels before proceeding to the next area
- Demonstrate mastery of competencies in order to matriculate
- Take and retake tests, as necessary, until a minimum competency level is demonstrated
- Perform to industry-based standards

Applied Academics

Approximately two-thirds (66 percent) of respondents indicate that their community colleges provide applied academic courses as part of the TPAD program.

Structured Work Experience

Respondents describe a variety of structured work experience opportunities that their community colleges offer. Examples are:

Type	Percent
Cooperative work experience	84
General work experience	42
Apprenticeship	28
Internship	23
Mentoring	22
Exploratory	13
Career shadowing	10

High School Preparation

When asked to rate how well students are prepared by their secondary school programs to take the professional technical education courses at community colleges, only 15 percent provide positive ratings. When asked what could be done to better prepare the students, respondents express a near consensus that secondary schools should put increased emphasis on basic skills in mathematics, English, reading and writing. As one respondent says: *"Many students come in with low basic skills. Many do not even know how to read a tape measure."*

Other ways of better preparing students include:

- Continue communication and coordination between high schools and community colleges
- Put more emphasis on study skills and a desire to learn
- Give high school teachers release time to work with community college staff
- Pay more attention to real life situations at the high school level
- Instill better work ethic in students
- Identify potential professional technical students earlier to begin their evaluation and training
- Provide better outreach and guidance services
- Include true industry-level practice and standards at the high school level

Special Populations

Approximately one-third of respondents report that enrollment of special populations in professional technical education classes has increased during the past two years. More than one-third report an increase in the use of support services by the special populations. A breakdown of the data is shown in Table 3.

Table 3
Reported Increase in Special Populations Enrollment and Their Use of Support Services

Special Population	Percent of Staff Reporting Increase in Enrollment	Use of Support Services
Women	50%	56%
Disadvantaged students	44	59
Limited English proficient students	36	48
Disabled students	36	59

The data suggest a general increase in the enrollment of special populations, particularly in the case of women. They also indicate an increase in the use of support services by special populations.

Respondents report a variety of efforts which their community colleges have made during the last two years to help the special populations gain greater access to or achieve greater success in professional technical education programs. Notable examples are:

Example	Percent
Better support services such as making tutors available	64
Better coordination with other service agencies to help students	51
Better marketing of available services	50
Better staff development in this area	42
Better prior information from the high schools	20

Several report other efforts to help the special populations students, including:

- Providing mentors to students
- Increasing counseling services
- Directing students to ESL classes to enhance their chances of success
- Establishing an ethnic student center to provide an environment of support
- Using adaptive equipment/technology
- Providing displaced worker programs
- Getting help from the special services coordinator

Respondents identify several barriers to greater access by the special populations. These include:

- Lack of funding (e.g., limited budget for tutors)
- Physical impediments to accessibility by the handicapped and disabled
- Hispanic students having to support their families after high school graduation
- Negative attitudes about the role of women in manufacturing
- Lack of prior information about students
- Increased enrollment making it difficult for vulnerable students to have access to support services
- Negative peer pressure making women reluctant to break into automotive trades
- Lack of gender equity training and hiring of special population students in the area
- Physical requirements of industry jobs preventing handicapped people from performing those jobs

Professional Development

During the past school year, most respondents spent a significant number of hours on professional development activities. A breakdown of these activities and their effectiveness as perceived by the respondents is presented in Table 4.

Table 4
Professional Development Activities for Community College Counselors and Teachers

Activity	Percent Staff	Number of Hours	Effectiveness High	Medium	Low
Professional association meetings or conferences	85%	36	45%	53%	2%
Seminar/workshops	87	29	70	28	2
Internship at a business or industry site	14	158	93	7	0
Peer coaching/guided practice	12	44	54	46	0
Special interest group networking	35	36	74	26	0

These data suggest that in all instances, the various staff development activities are well received by the participants. In particular, internships at a business/industry site receive high ratings from nearly all participants.

To make the staff development activities more effective, several respondents provide suggestions:

- Support more professional presentations

- Avoid focusing on politically correct thinking and deal with real issues
- Provide more internships at business/industry sites
- Staff development activities should be more focused and specialized
- Get professional associations involved with workplace issues
- Include more group interaction activities

Effective Practices

A predominant majority of respondents indicate that they find out about effective practices in professional technical education through discussions with colleagues (84 percent) and reading (80 percent). Other means of finding out about effective practices include attending professional conferences (75 percent) and visiting other programs (55 percent).

Some (16 percent) indicate that they find out about effective practices through such means as working in the field, participating in committee meetings, visiting industry sites, conducting research, and networking with other professionals.

A predominant majority (84 percent) indicate that they share effective practices with colleagues or other institutions through discussions with colleagues. Other ways of sharing include:

Method	Percent
Professional conferences	74
Inviting others to visit	50
Writing articles	11

Some indicate that they share effective practices through such means as E-mail, hosting workshops, presenting at seminars, visiting industry sites, being part of the teacher improvement process, and sharing materials.

According to respondents, the dissemination of effective practices can be made more effective through:

- Multi-college conferences
- More frequent workshops
- Short videotapes on effective practices
- A monthly newsletter on effective practices
- A discipline-specific journal with easy to read articles that can be perused quickly for awareness and information
- A communication network for professional technical educators
- Use of dedicated training time for effective practices
- More peer sharing, peer coaching, and team teaching
- More applied demonstrations of effective practices at conferences
- Release time for workshop leaders
- More money for travel to visit exemplary sites

Suggestions for Improvement

Respondents make a range of suggestions for improving professional technical education in their regions:

- Provide more instructional time for at risk students
- Increase communication with four-year colleges (e.g., for possible transfer of credits)
- Have a better understanding of what programs exist and what their goals are
- Provide better services to students. *"Let's stop pushing them into what we want and help them to discover what they want."*
- Provide staff training on applied academics
- Improve business, industry and college partnerships
- Hire more part-time teachers to teach the more narrow-scope technical subjects what appeal to the community
- Make resources available to keep up with the rapidly changing technology
- Increase the use of community resources
- Provide time and resources to support current curriculum writing efforts
- Identify entry level skills required by business and industry
- Conduct a study on job availability and advancement opportunities in the various fields
- Increase "brown-bag" sharing, publications in college newsletter, and inservice opportunities
- Reward the faculty for accomplishments
- Provide more time for coordination between high schools and community colleges
- Develop competency-based programs for K-16
- Upgrade staff training for high school instructors

SURVEY OF PRIVATE PROFESSIONAL TECHNICAL SCHOOL TEACHERS AND COUNSELORS

A total of 18 teachers and 3 counselors from 10 private vocational schools participated in the survey. Most have been with their schools for one to five years. A breakdown of their tenures is as follows:

Years	Percent
Less than 1 year	10
1 to 5 years	76
6 to 10 years	4
11 to 15 years	0
More than 15 years	10

Because of the low response rate (33 percent) from private vocational schools, the findings presented may or may not be representative of the private school population in Oregon.

Involvement of Stakeholder Groups

According to respondents, several stakeholder groups are involved in planning professional technical education programs. However, in all cases, less than one-half of respondents provide high ratings (a rating of 4 or 5 on a 5-point scale) on the extent of their involvement. A breakdown of high ratings by stakeholder group is as follows:

Group	Percent
Business	46
Industry	41
Public employees	30
Community groups	10

When asked how beneficial the involvement of the stakeholder groups is, most of the respondents provide highly positive ratings:

Group	Percent
Business	64
Industry	62
Community groups	50
Public employees	50

Program Coordination

Community Colleges

Only 10 percent provide positive ratings on how well services are coordinated between their schools and community colleges.

Fourteen percent indicate that the linkage between their schools and community colleges is established through meetings between the two faculties. Another five percent say the linkage is made through sharing instructors in the classroom.

Only 16 percent of respondents indicate that they meet with community college staff or administrators as part of their work during the past school year to discuss program coordination or curriculum development.

Private school staff identify some major barriers to an effective program coordination between high schools and community colleges. The most notable ones are:

Barrier	Percent
Lack of time	29
Protecting one's turf	24
No perceived need	19

Four-Year Colleges

None of the respondents indicate that they meet with four-year college staff or administrators to discuss applied academics programs.

Workforce Programs

One-half feel that Workforce 2000 I and II programs are well coordinated with JTPA programs. They rate the coordination favorably. A much smaller percentage provide similarly positive ratings on coordination between Workforce 2000 and other programs:

Program	Percent
The total educational program	25
Carl Perkins	14
JOBS programs	13

According to respondents, major barriers to coordination include:

Barrier	Percent
Turf issues	10
Lack of understanding of the other agencies	10
Lack of time	5

Barrier	Percent
Divergent goals among the programs	5
Lack of incentives	5

Curriculum and Instruction

Curriculum Standards

Most respondents (69 percent) provide favorable ratings on the extent to which curricular materials are developed according to industry standards.

Instructional Approach

A large majority (75 percent) provide favorable ratings on the extent to which instruction is delivered in a competency-based approach.

Applied Academics

Only 11 percent indicate that their schools provide applied academics as part of TPAD programs. Close to one-half (47 percent) say applied academics are not provided in that way. The remainder (42 percent) are not sure.

Structured Work Experience

According to the respondents, many types of structured work experience opportunities are offered by the private vocational schools, including:

Type	Percent
General work experience	38
Cooperative work experience	14
Mentoring	10
Exploratory	10
Apprenticeship	10
Career shadowing	5
Internship	5

Perceived Impact

A large majority (82 percent) of the school staff feel that their schools do a good job in preparing students for professional technical education courses at the community college level.

Special Populations

Less than one-third of respondents report that enrollment of special populations in professional technical education classes has increased during the past two years. A smaller percentage indicate that the use of support services for special populations has increased. A breakdown of the data is shown in Table 5.

Table 5
Reported Increase in Special Populations Enrollment and Their Use of Support Services

Special Population	Percent of Staff Reporting Increase in Enrollment	Use of Support Services
Women	26%	24%
Disadvantaged students	0	0
Limited English proficient students	6	13
Disabled students	29	0
Other	24	0

The data suggest some increase in the enrollment of special populations. They may also imply that there is a need to increase the availability and use of support services by special populations.

Respondents report several efforts which their schools have made during the last two years to help the special populations gain greater access to or achieve greater success in professional technical education programs. Notable examples include:

Effort	Percent
Better marketing of available services	43
Better support services such as making tutors available	14
Better coordination with other service agencies to help students	10
Better staff development in this area	5

Professional Development

During the past school year, a significant proportion of school staff spent a significant number of hours on professional development activities. A breakdown of these activities and their effectiveness as perceived by the respondents is presented in Table 6.

Table 6
Professional Development Activities for
Private Professional Technical School Teachers and Counselors

Activity	Percent Staff	Number of Hours	Effectiveness High	Medium	Low
Professional association meetings or conferences	38%	26	57%	43%	0%
Seminar/workshops	38	37	71	29	0
Internship at a business or industry site	10	50	50	0	
Peer coaching/guided practice	10	106	100	0	0
Special interest group networking	48	16	100	0	0

These data suggest that the various professional development activities are well received by the school staff, with most respondents providing favorable ratings on their effectiveness.

Effective Practices

A large majority (76 percent) of school staff indicate that they found out about effective practices in professional technical education through discussions with colleagues. Other means of sharing effective practices include:

Practice	Percent
Reading	76
Professional conferences	33
Visiting other programs	29

A small number (10 percent) indicate that they found out about effective practices through other means.

A predominant majority (81 percent) indicate that they share effective practices with colleagues or other institutions through discussions with colleagues. Other ways of sharing include:

Methods	Percent
Inviting others to visit	33
Professional conferences	29
Writing articles	10

SURVEY OF HIGH SCHOOL ADMINISTRATORS

A total of 51 administrators (principals and program directors) from 31 high schools participated in the survey. About half have been with their respective schools for six or more years. A breakdown of their tenures at their respective schools is as follows:

Years	Percent
Less than 1 year	17
1 to 5 years	35
6 to 10 years	18
11 to 15 years	16
More than 15 years	14

Involvement of Stakeholder Groups

The respondents indicate that a range of stakeholder groups are involved in planning professional technical education programs. When asked to rate the extent of involvement, less than one-half provide high ratings (a rating of 4 or 5 on a 5-point scale). A breakdown of high ratings by stakeholder group is as follows:

Group	Percent
Regional consortia	50
Business	43
Industry	35
Public employees	29
Community groups	28
Labor	22
Private Industry Council	13

When asked how beneficial the involvement of the stakeholder groups is, most respondents provide highly positive ratings:

Group	Percent
Business	72
Regional consortia	69
Industry	64
Community groups	54
Labor	42
Private Industry Council	40
Public employees	31

Program Coordination

Colleges

Only 28 percent of respondents provide favorable ratings on how well professional technical education services are coordinated between high schools and community colleges. None provide favorable ratings on coordination with four-year colleges.

A large majority (71 percent) indicate that the linkage between high schools and community colleges is established through meetings between the two faculties. Other means of providing a linkage include:

Linkage	Percent
Joint curriculum development	57
Visits to each other's classes	16
Sharing instructors in the classroom	12

A large majority (84 percent) indicate that they met with community college staff or administrators as part of their work during the past school year to discuss the following topics:

Topic	Percent
2+2/Tech Prep programs	73
Program coordination	63
TPAD programs	53
Applied academics	45
Curriculum development	41
Special support services for students	22

More than one-half (53 percent) of respondents indicate that they met with four-year college staff or administrators during the past school year to discuss such topics as:

Topic	Percent
Program coordination	31
Curriculum development	22
Applied academics	18
Special support services for students	14

Respondents identify several major barriers to effective coordination, including:

Barrier	Percent
Lack of time	75
Protecting one's turf	33
No perceived need	14

Workforce Programs

Many (62 percent) respondents feel that Workforce 2000 I and II programs are well coordinated with Carl Perkins programs. They rate the coordination favorably. A much smaller percentage provide similarly positive ratings on coordination between Workforce 2000 and other programs:

Program	Percent
The total educational program	29
JTPA programs	20
JOBS programs	3

According to respondents, major barriers to coordination include:

Barrier	Percent
Lack of time	53
Lack of understanding of the other agencies	41
Divergent goals among the programs	24
Turf issues	22
Lack of incentives	6

Curriculum and Instruction

Curriculum Standards

Only 17 percent of respondents provide favorable ratings on the extent to which curricular materials are developed according to industry standards.

Instructional Approach

Less than one-third (26 percent) of respondents provide favorable ratings on the extent to which instruction is delivered in a competency-based approach.

Structured Work Experience

According to respondents, many types of structured work experience opportunities are offered by high schools. They identify the following as the most common:

Type	Percent
Cooperative work experience	75
General work experience	59
Career shadowing	43
Mentoring	29
Exploratory	29
Apprenticeship	20
Internship	14

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Special Populations

More than one-third of respondents report that enrollment of special populations in professional technical education classes has increased during the past two years. About the same percentage of respondents indicate that the use of support services for the special populations has also increased. A breakdown of the data is presented in Table 7.

Table 7
Reported Increase in Special Populations Enrollment and Their Use of Support Services

Special Population	Percent of Staff Reporting Increase in Enrollment	Use of Support Services
Women	39%	30%
Disadvantaged students	55	38
Limited English proficient students	41	38
Disabled students	41	47

Respondents report an array of efforts which their schools have made during the last two years to help the special populations gain greater access to or achieve greater success in professional technical education programs. Notable exampies include:

Example	Percent
Better support services such as making tutors available	51
Better marketing of available services	35
Better staff development in this area	31
Better coordination with other service agencies to help students	26

Professional Development

During the past school year, a large majority of respondents spent a significant number of hours on professional development activities. A breakdown of these activities and their effectiveness as perceived by respondents is shown in Table 8.

Effective Practices

A large majority (75 percent) of the respondents indicate that they find out about effective practices in professional technical education through professional conferences. Other means of finding out about such practices include:

Practice	Percent
Reading	71
Discussions with colleagues	69
Visiting other programs	51

Table 8
Professional Development Activities for High School Administrators

Activity	Percent Staff	Number of Hours	Effectiveness High	Medium	Low
Professional association meetings or conferences	82%	34	33%	65%	2%
Seminar/workshops	84	30	50	48	2
Internship at a business or industry site	8	0	75	25	
Peer coaching/guided practice	4	40	66	0	34
Special interest group networking	31	14	41	53	6

A large majority (75 percent) indicate that they share effective practices with colleagues or other institutions through discussions with colleagues. A small number (10 percent) indicate that they share through other means. Other ways of sharing include:

Method	Percent
Inviting others to visit	53
Professional conferences	49
Writing articles	10

Other Workforce Issues

Economic Development Priorities

Less than one-half (43 percent) of respondents indicate that they are familiar with the economic development priorities in their region. Only 14 percent are familiar with the economic development priorities for the state as a whole.

Nineteen percent indicate that their region has developed plans to continued programs started under Workforce 2000 I and II.

America's Choice

More than two-thirds (76 percent) of respondents indicate that they are familiar with *America's Choice: high skills or low wages!*, a report of the Commission on the Skills of the American Workforce.

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SURVEY OF COMMUNITY COLLEGE ADMINISTRATORS

A total of 35 administrators, including professional technical deans, institutional researchers and program administrators, from 16 community colleges participated in the survey. Most have been with their respective colleges for six or more years. A breakdown of their tenures is as follows:

Years	Percent
Less than 1 year	6
1 to 5 years	21
6 to 10 years	23
11 to 15 years	23
More than 15 years	26

Involvement of Stakeholder Groups

According to the respondents, a range of stakeholder groups are involved in planning professional technical education programs. When asked to rate the extent of involvement, most respondents provide high ratings (a rating of 4 or 5 on a 5-point scale). A breakdown of high ratings by stakeholder group is as follows:

Group	Percent
Industry	74
Business	74
Regional consortia	48
Community groups	39
Labor	29
Public employees	27
Private Ind[illegible] Council	20

When asked how beneficial the involvement of the stakeholder groups is, most respondents provide positive ratings:

Group	Percent
Industry	91
Business	88
Regional consortia	59
Labor	44
Community groups	41
Public employees	36
Private Industry Council	25

Program Coordination

High Schools

Less than one-half (43 percent) of respondents provide positive ratings (a rating of 4 or 5 on a 5-point scale) on how well services are coordinated between high schools and community colleges. None provide positive ratings on coordination with private professional technical schools.

A predominant majority (94 percent) indicate that the linkage between high schools and community colleges is established through meetings between the two faculties. Other means of providing a linkage include:

Linkage	Percent
Joint curriculum development	89
Visits to each other's classes	40
Sharing instructors in the classroom	17

A large majority (80 percent) indicate that they meet with secondary school staff or administrators as part of their work during the past school year. A wide range of topics are discussed at these meetings. Examples include:

Topic	Percent
Program coordination	74
2+2/Tech Prep programs	63
Curriculum development	60
TPAD programs	57
Applied academics	54
Special support services for students	31

A small number (9 percent) indicate that there are no major barriers to effective coordination. Others identify a range of barriers, including:

Barrier	Percent
Lack of time	71
Protecting one's turf	31
No perceived need	20

Four-Year Colleges

Only 20 percent of the respondents indicate that they meet with four-year college staff or administrators to discuss applied academic programs.

Workforce Programs

A majority (59 percent) of the respondents feel that Workforce 2000 I and II programs are well coordinated with Carl Perkins programs. They rate the coordination favorably. A smaller percentage provide similarly positive ratings on coordination between Workforce and the other programs:

Program	Percent
The total educational program	57
JOBS programs	32
JTPA programs	24

According to respondents, major barriers to coordination include:

Barrier	Percent
Lack of understanding of the other agencies	57
Divergent goals among the programs	46
Lack of time	43
Turf issues	40
Lack of incentives	17
Other	14

Curriculum and Instruction

Curriculum Standards

A majority (65 percent) of respondents provide favorable ratings on the extent to which curricular materials are developed according to industry standards.

Instructional Approach

Less than one-third (27 percent) provide favorable ratings on the extent to which instruction is delivered in a competency-based approach.

Applied Academics

More than one-half (53 percent) of respondents indicate that their community college provides applied academic courses as part of the Tech Prep/Associate Degree program.

Structured Work Experience

According to respondents, many types of structured work experience opportunities are offered by the community colleges. They identify the following as the most common:

Program	Percent
Cooperative work experience	86
Apprenticeship	43
General work experience	37
Mentoring	29
Internship	20
Career shadowing	11
Exploratory	6

Student Preparation

Less than one-fifth (17 percent) of respondents provide favorable ratings on how well students are prepared by their secondary school programs to take the professional technical education courses at community colleges.

Special Populations

Most respondents report that enrollment of special populations in professional technical education classes has increased during the past two years. They also indicate an increase in the use of support services by special populations. A breakdown of the data is presented in Table 9.

Table 9
Reported Increase in Special Populations Enrollment and Their Use of Support Services

Special Population	Percent of Staff Reporting Increase in Enrollment	Use of Support Services
Women	82%	64%
Disadvantaged students	80	74
Limited English proficient students	42	59
Disabled students	55	76
Other	60	25

The respondents report an array of efforts which their schools have made during the last two years to help the special populations gain greater access to or achieve greater success in professional technical education programs. Notable examples include:

Method	Percent
Better support services such as making tutors available	77
Better coordination with other service agencies to help students	66
Better staff development in this area	57
Better marketing of available services	54
Better prior information from the high schools	31
Other	20

Professional Development

During the past school year, most respondents spent a significant number of hours on professional development activities. A breakdown of these activities and their effectiveness as perceived by them is shown in Table 10.

Table 10
Professional Development Activities for Community College Administrators

Activity	Percent Staff	Hours	Effectiveness High	Medium	Low
Professional association meetings or conferences	94%	47	58%	39%	3%
Seminar/workshops	94	66	38	55	7
Internship at a business or industry site	0	0	0	0	0
Peer coaching/guided practice	3	150	34	33	33
Special interest group networking	51	53	63	32	5

Effective Practices

Most respondents (89 percent) indicate that they found out about effective practices in professional technical education through discussions with colleagues. Other means of sharing effective practices include:

Method	Percent
Professional conferences	80
Reading	77
Visiting other programs	69

A few (14 percent) indicate that they found out about effective practices through other means.

A predominant majority (86 percent) indicate that they share effective practices with colleagues or other institutions through discussions with colleagues. Other ways of sharing include:

Method	Percent
Professional conferences	69
Inviting others to visit	54
Writing articles	11
Other	14

Other Workforce Issues

Economic Development Priorities

A majority (61 percent) of the community college administrators indicate that they are familiar with the economic development priorities in their respective regions. About one-half (52 percent) said they are familiar with the priorities for the state as a whole.

America's Choice

A predominant majority (84 percent) of community college administrators indicate that they are familiar with *America's Choice: high skills or low wages!*, the report of the Commission on the Skills of the American Workforce.

Approximately a quarter (24 percent) of respondents indicate that their region has developed plans to continue programs started under Workforce 2000 I and II.

SURVEY OF PRIVATE PROFESSIONAL TECHNICAL SCHOOL ADMINISTRATORS

A total of 13 administrators participated in the survey. A breakdown of their tenures at their respective schools is as follows:

Years	Percent
Less than 1 year	23
1 to 5 years	15
6 to 10 years	15
11 to 15 years	8
More than 15 years	23
Unknown	16

It should be noted that due to the low response rate (43 percent) from private professional technical school administrators, the findings presented in the sections to follow may or may not be representative of the private school population in the state.

Involvement of Stakeholder Groups

The respondents indicate that a range of stakeholder groups are involved in planning professional technical education programs. When asked to rate the extent of involvement, a small proportion of respondents provide high ratings (ratings of 4 or 5 on a 5-point scale) for business (36 percent) and industry (18 percent). The involvement of other stakeholder groups (e.g., regional consortia, public employees, community groups, labor, and the Private Industry Council) is evidently minimal or non-existent.

When asked how beneficial the involvement of the stakeholder groups is, a majority (60 percent) of respondents provide highly positive ratings for business involvement. Other stakeholder groups receive positive ratings from smaller proportions of respondents:

Group	Percent
Industry	33
Community groups	22
Private Industry Council	22
Labor	11
Public employees	11

Program Coordination

Colleges

None of the respondents provide favorable ratings on how well professional technical education services are coordinated between their schools and community colleges. Also, none provide favorable ratings on coordination with four-year colleges.

A small percentage (15 percent) of the respondents indicate that the linkage between their schools and community colleges is established through meetings between the two faculties. Another means of linkage is through sharing instructors in the classroom (8 percent).

Only 18 percent indicate that they meet with community college staff or administrators as part of their work during the past school year to discuss curriculum development (15 percent) or program coordination (8 percent).

Close to one-third (30 percent) of respondents indicate that they meet with four-year college staff or administrators during the past school year to discuss such issues as:

Issue	Percent
Program coordination	15
Curriculum development	8
Applied academics	8
Special support services for students	8

The respondents identify several major barriers to effective coordination, including:

Barrier	Percent
No perceived need	46
Protecting one's turf	39
Lack of time	8

Workforce Programs

Approximately one-third (30 percent) of respondents feel that Workforce 2000 I and II programs are well coordinated with JTPA programs. They rate the coordination favorably.

None provide similarly positive ratings on coordination between Workforce 2000 programs on the one hand and Carl Perkins, JOBS, and the total educational program on the other. It should be noted that the ratings may be more a measure of respondents' lack of familiarity with the programs than an assessment of the effectiveness of coordination.

According to respondents, major barriers to coordination include:

Barrier	Percent
Lack of understanding of the other agencies	15
Lack of incentives	8
Lack of time	8

Fifteen percent indicate that they knew of no major barriers to coordination.

Curriculum and Instruction

Curriculum Standards

Close to one-half (46 percent) of respondents provide favorable ratings on the extent to which curricular materials are developed according to industry standards.

Instructional Approach

Most (75 percent) provide favorable ratings on the extent to which instruction is delivered in a competency-based approach.

Structured Work Experience

Some respondents report that their schools provide structured work experience opportunities to students, including:

Program	Percent
General work experience	15
Apprenticeship	15
Exploratory	8
Mentoring	7
Internship	7

Close to one-third (31 percent) indicate that their schools also provide other work experience activities.

Special Populations

Less than one-third of the respondents report that enrollment of special populations in professional technical education classes has increased during the past two years. An even lower percentage of respondents indicate that the use of support services for the special populations has increased. A breakdown of the data is presented in Table 11.

Table 11
Reported Increase in Special Populations Enrollment and Their Use of Support Services

Special Population	Percent of Staff Reporting Increase in Enrollment	Use of Support Services
Women	30%	9%
Disadvantaged students	17	0
Limited English proficient students	8	0
Disabled students	8	0

Respondents report several efforts which their schools have made during the last two years to help the special populations gain greater access to or achieve greater success in professional technical education programs. Notable examples include:

Method	Percent
Better marketing of available services	39
Better staff development in this area	15
Better coordination with other service agencies to help students	15
Better support services such as making tutors available	8

Professional Development

During the past school year, a significant proportion of respondents spent a significant number of hours on professional development activities. A breakdown of these activities and their effectiveness as perceived by the respondents is shown in Table 12.

Table 12
Professional Development Activities
for Private Professional Technical School Administrators

Activity	Percent Staff	Number of Hours	Effectiveness High	Medium	Low
Professional association meetings or conferences	77%	25	67%	33%	0%
Seminar/workshops	54	45	71	29	0
Internship at a business or industry site	8	0	100	0	
Peer coaching/guided practice	39	20	75	25	0
Special interest group networking	62	33	57	43	0

Effective Practices

Most (85 percent) respondents indicate that they found out about effective practices in professional technical education through discussions with colleagues. Other means of finding out about such practices include:

Method	Percent
Reading	62
Professional conferences	31
Visiting other programs	15

A predominant majority (92 percent) indicate that they share effective practices with colleagues or other institutions through discussions with colleagues. Other ways of sharing include:

Method	Percent
Inviting others to visit	31
Professional conferences	46
Writing articles	15

A small number (8 percent) indicate that they share through other means.

Other Workforce Issues

Economic Development Priorities

Less than one-half (39 percent) of respondents indicate that they are familiar with the economic development priorities in their region. Only 23 percent are familiar with the economic development priorities for the state as a whole.

None knew whether their region has developed plans to continued programs started under Workforce 2000 I and II.

America's Choice

None of the respondents indicate that they are familiar with *America's Choice: high skills or low wages!*, a report of the Commission on the Skills of the American Workforce.

SURVEY OF HIGH SCHOOL STUDENTS

A total of 487 students from 37 high schools participated in the survey. A breakdown of the numbers of respondents by grade level, gender and ethnic background is as follows:

Grade level	Percent
9th	5
10th	17
11th	31
12th	46

Gender	Percent
Male	64
Female	36

Ethnic background	Percent
Asian	2
Black	1
Hispanic	5
White	89
Other	3

Course Enrollment

Significant proportions of respondents have taken a wide range of courses in various professional technical areas, including:

Course	Percent
Accounting & Financial Systems	36
Agriculture/Agri-Business	23
Child Care	15
Clothing	18
Construction (Woods)	47
Diversified Occupations	4
Drafting	33
Electronics Technology	15
Food Service	28
Forestry/Forest Products	7
Graphics Design & Production	11
Health Occupations	28
Hospitality, Tourism, & Recreation	3
Manufacturing Technology (Metals)	28
Marketing	13
Mechanical Technology	19

Course	Percent
Office Systems	20
Service Occupations	3
Technology Education	11
Other professional technical instruction	13

Involvement of Business, Industry, and Labor

More than one-third (35 percent) of respondents visit a business or job site to find out how people work. Approximately one-third (30 percent) report having outside business or industry people in the classroom to help teach the course. Less than one-fourth (24 percent) indicate that they have visited a career fair. An even smaller percentage (11 percent) have an outside business or industry person as a mentor or tutor.

Curriculum and Instruction

Skill Emphasis

The high school students indicate that in the professional technical courses they have taken, a lot of emphasis is placed on mathematics (65 percent), sciences (44 percent) and writing (44 percent).

Applied Academics

The respondents report that they have taken a variety of applied academic courses, including:

Course	Percent
Applied Mathematics	60
Applied Biology/Chemistry	55*
Applied Economics	23
Applied Communication	18
Materials Science and Technology	13
Principles of Technology	11
Chemistry in the Community	5

Respondents provide several reasons for not taking any or some of the applied academics courses. Examples are:

Reason	Percent
Courses not offered at their schools	35
Lack of interest	30

* Students taking regular biology or chemistry (instead of Applied Biology/Chemistry) may have checked the item, resulting in an inflated percentage.

Reason	Percent
Lack of time	20
Will take course later	20
Other	9

When asked to rate the content of the courses, most students provide highly favorable ratings (i.e., excellent or good). Tabie 13 presents a summary of the ratings.

Table 13
Ratings of Content of Applied Academics Courses by High School Students

	Course Content			
Course	**Excellent**	**Good**	**Fair**	**Poor**
Applied Biology/Chemistry	22%	55%	21%	2%
Applied Communication	25	54	14	7
Applied Economics	17	52	24	7
Applied Mathematics	26	47	23	3
Chemistry in the Community	33	33	24	9
Materials Science & Technology	18	46	34	2
Principles of Technology	36	47	14	3

When asked to rate the instructional methods used to teach the applied academics courses, again, most students provide highly favorable ratings. Table 14 present a summary of the ratings.

Table 14
Ratings of Instructional Methods in Applied Academics Courses by High School Students

	Instructional Method			
Course	**Excellent**	**Good**	**Fair**	**Poor**
Applied Biology/Chemistry	27%	48%	19%	6%
Applied Communication	31	44	17	7
Applied Economics	16	50	26	8
Applied Mathematics	28	44	22	6
Chemistry in the Community	31	38	17	14
Materials Science & Technology	19	47	31	3
Principles of Technology	39	40	13	8

Structured Work Experience

A relatively small percentage of respondents indicate that they participate in structured work experience programs. Examples include:

Program	Percent
General work experience	18
Cooperative work experience	15
Career shadowing	11
Mentoring	5
Apprenticeship	5
Exploratory	4
Internship	2
Other	5

A majority (68 percent) of those who participate in work experience programs rate their experience favorably (ratings of 4 or 5 on a 5-point scale).

Counseling Services

A majority (61 percent) of the high school students indicate that they have received career counseling at their high schools. Of those who received counseling, about one-half (49 percent) rate the service as very helpful.

Credit Transfer

Slightly less than one-half (42 percent) indicate that the community college in their region provides credit for the professional technical education courses they have taken or plan to take at their high schools.

Perceived Impact

More than two-thirds (78 percent) of high school students believe that taking professional technical education courses will help them get a job in a related area. A predominant majority (81 percent) feel that as a result of taking these courses, they are better prepared for an education at the college level (community college and four-year college).

SURVEY OF COMMUNITY COLLEGE STUDENTS

A total of 157 students from 15 community colleges participated in the survey. There are 45 percent male and 56 percent female students. The respondents' ages ranged from 16 to 73, with an average of 33. A predominant majority (89 percent) are white; 3 percent are Asian; 2 percent are Hispanic; the remainder did not identify their ethnic background.

About 17 percent are students at the Advanced Technology Center; another 32 percent attended one of the community-based skill centers.

Involvement of Business, Industry and Labor

Many respondents indicate that their professional technical courses include activities which involved business and industry people. For example, 47 percent report having business or industry people in the classroom to help teach the course. Close to one-half (43 percent) visited a business or job site to find out how people work. About 20 percent visited a career fair. Another 12 percent had an outside business or industry person as a mentor or tutor.

Curriculum and Instruction

Skill Emphasis

Most community college students indicate that in the professional technical education courses they have taken a lot of emphasis is placed on mathematics (72 percent), writing (72 percent), and science (58 percent).

Applied Academics

Many respondents report having taken applied courses, including applied academics. Examples are:

Course	Percent
Applied Mathematics	56
Computer Literacy	50
Applied Communication	36
Technical Writing	30
Mathematics for Technicians	28
Principles of Technology	24
Unified Technical Concepts/Physics for Technicians	14
Other	23

Respondents provide several reasons for not having taken any or some of the courses, including:

Reasons	Percent
Will take courses later	32
Lack of time	26
Lack of interest	14
Courses not offered at their community college	10
Other	19

Most community college students provide highly positive (i.e., excellent or good) ratings on the content of courses they have taken. Table 15 presents a summary of the ratings.

Table 15
Ratings of Content of Applied Academics Courses by Community College Students

	Course Content			
Course	**Excellent**	**Good**	**Fair**	**Poor**
Applied Communication	40%	45%	10%	5%
Applied Mathematics	40	45	11	4
Computer Literacy	54	31	12	3
Mathematics for Technicians	44	46	6	4
Principles of Technology	61	26	8	5
Technical Writing	41	45	12	2
Unified Technical Concepts\ Physics for Technicians	44	30	22	4

When asked to rate the instructional methods used to teach the courses, again, most students provide highly positive ratings. Table 16 provides a summary of their ratings.

Table 16
Ratings of Instructional Methods in Applied Academics Courses by Community College Students

	Instruction Method			
Course	**Excellent**	**Good**	**Fair**	**Poor**
Applied Communication	40%	42%	15%	3%
Applied Mathematics	38	40	13	9
Computer Literacy	50	32	8	10
Mathematics for Technicians	39	51	6	4
Principles of Technology	62	24	5	8
Technical Writing	46	30	22	2
Unified Technical Concepts\ Physics for Technicians	40	25	23	12

Structured Work Experience

A relatively low percentage of community college students report that they participate in work experience programs. Examples include:

Program	Percent
Cooperative work experience	19
General work experience	15
Internship	3
Program	**Percent**
Exploratory	2
Mentoring	2
Apprenticeship	0
Other	13

A predominant majority (85 percent) of those who participate in work experience programs rate such experience as very useful.

Career Counseling

A majority (64 percent) of students report that they had received career counseling at their community college. More than one-half (60 percent) feel that the counseling they received is very useful.

Youth Leadership

Approximately one-half (53 percent) of students indicate that their community college provides opportunities for leadership training and activities. However, only 11 percent indicate that they are a member of a youth leadership organization.

Perceived Impact

A predominant majority (91 percent) of community college students indicate that taking professional technical education courses will help them get a job in a related area. Another 85 percent feel that taking the courses will prepare them for further postsecondary education.

High School Preparation

Only one-third (33 percent) of students indicate that their high school program prepared them very well to take professional technical education courses at the community college. None report having enrolled in a 2+2/Tech Prep program in high school.

Respondents made the following suggestions for improving high school programs:

- Provide more instructional and learning time.
- Place more emphasis on math, science, writing and critical thinking skills.
- Provide a more rounded education.
- Provide more exposure to the job market.
- Increase instruction on team problem solving.
- Provide more information on technical education courses.
- Provide hands-on work experience.
- Demand more from students to graduate.

Positive Aspects of Professional Technical Courses

Respondents provide a lengthy list of things they liked best about professional technical courses they had taken. The most common ones are:

- Instructors who are variously described as professional, competent, accessible, outstanding, friendly, knowledgeable, helpful, great, involved, enthusiastic, interesting, and caring.
- Wide variety of courses
- Relevance of course work to the world of work and their respective career paths
- Access to computers and upgraded equipment
- Hands-on learning
- Small class size and one-on-one help
- Positive learning environment
- Involvement of business and industry people
- Internships with business and industry

Negative Aspects of Professional Technical Courses

On the negative side, respondents also identify a lengthy list of things they liked the least about professional technical courses, including:

- Not having sufficient instructional time (e.g., classes were too short, lectures were too rushed, and instructional pace was too fast)
- Outdated equipment and technologies
- Lack of equipment and space
- Overlapping or redundant classes
- Limited opportunities in the externship program
- Insufficient staff to offer needed courses
- Lack of individual help
- Not enough classes offered year round
- Spending time on unnecessary things (*"Some required classes are a waste of time."*)
- Limitation on transferable credits to four-year college

- Political infighting among departments
- Lack of cooperation between instructors and administrators

Suggestions for Improvement

Respondents identify a wide variety of ways in which their professional technical education classes can be improved. Examples include:

- Provide more instructional time
- Put more emphasis on computer skills, mathematics, and technical writing
- Expand the list of course offerings and offer classes more often so students have more to choose from
- Offer more classes in data processing and writing communication
- Reduce the class size
- Increase cooperation among different departments to work for the good of the student
- Improve assessment practices (e.g., use alternatives to true and false questions)
- Increase team learning
- Allow more time in the labs to get help
- Upgrade lab equipment
- Provide more one-on-one help
- Make class schedules more flexible so students have multiple opportunities to take classes they need
- Reduce the overlap and redundancy in courses (e.g., between English for Business and Business Communications)
- Provide credit for prior work experience
- Use real world examples in instruction
- Provide more hands-on experience
- Streamline the enrollment/registration system
- Provide longer externships and apprenticeships

SURVEY OF PRIVATE PROFESSIONAL TECHNICAL SCHOOL STUDENT

A total of 69 students from 13 private vocational schools participated in the survey. There are 33 percent male and 67 percent female students. Respondents' ages ranged from 19 to 59, with an average of 39. A predominant majority (96 percent) are white, 3 percent are Hispanic, and 1 percent are black.

Students are enrolled in the following professional technical areas:

- Accounting/bookkeeping
- Business information
- Forest management
- Goldsmithing/jewelry making
- Healing arts
- Hotel management
- Insurance
- Legal administration
- Massage therapy
- Medical office administration
- Modeling
- Real estate sales
- Tax preparation
- Travel

Involvement of Business, Industry, and Labor

Some indicate that their professional technical courses include activities which involved business and industry people. For example, 28 percent of them report having business or industry people in the classroom to help teach the course. Another 28 percent visited a business or job site to find out how people work. Sixteen percent had an outside business or industry person as a mentor or tutor. One percent visited a career fair.

Curriculum and Instruction

Skill Emphasis

Significant proportions of students indicate that in the professional technical education classes they have taken a lot of emphasis is placed on mathematics (47 percent), writing (34 percent), and science (17 percent).

Structured Work Experience

One-third (33 percent) of students report that they participate in work experience activities. A predominant majority (91 percent) of those who participate in work experience activities rate such experience as very useful (i.e., ratings of 4 or 5 on a 5-point scale).

Perceived Impact

A predominant majority (92 percent) of students indicate that taking professional technical education courses will help them get a job in a related area.

High School Preparation

Only 22 percent indicate that their high school program prepared them very well to take professional technical education courses at the private vocational schools.